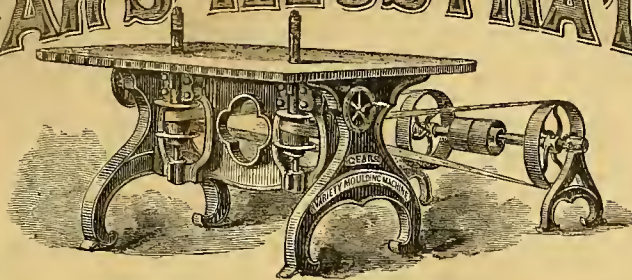
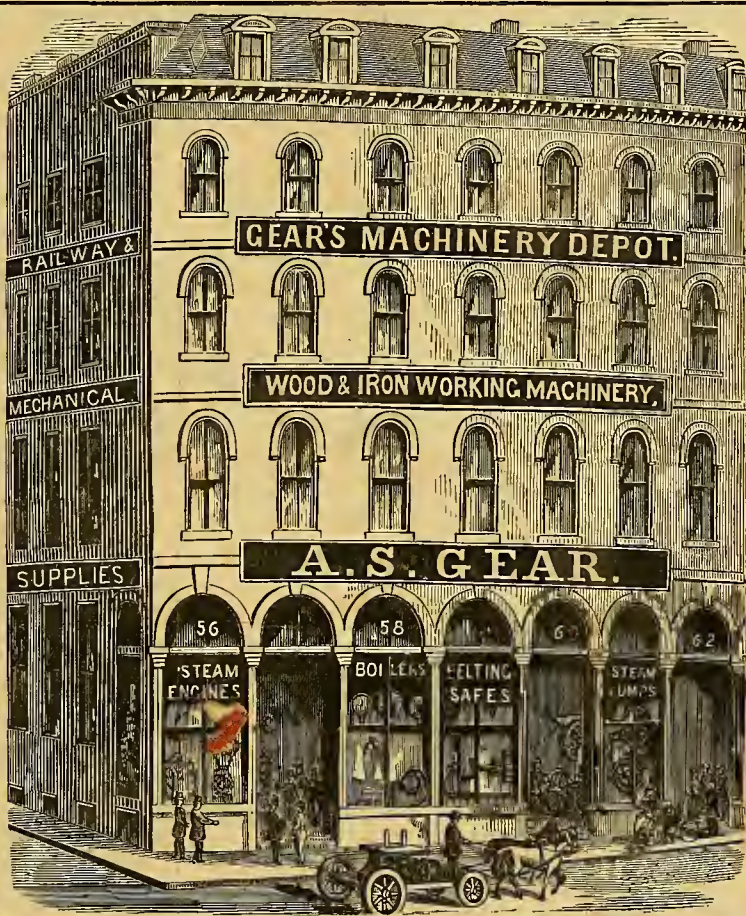


GEAR'S ILLUSTRATED



# CATALOGUE



OF WOOD & IRON WORKING

# MACHINERY.

BOSTON.



# Wood and Iron Working Machinery,

Steam Engines, Boilers, and Mechanical Supplies.

56 to 62 } **A. S. GEAR,** { 56 to 62 }  
Sudbury Street, } BOSTON, MASS., U. S. A. { Sudbury Street,

**M**ANUFACTURER, Contractor, and Dealer in all kinds of Machinery and General Supplies for Wood and Iron Working Establishments, will furnish any article or device, or give assistance in selecting the best Machinery and Supplies known, REGARDLESS OF MAKER. The trouble usually experienced in selecting, and the hard task of deciding intelligently and satisfactorily as to the merits of different machines, or the truthfulness of the representations advanced by different manufacturers and dealers who are particularly interested in the machines they build or are special agents for, can be wholly obviated by dealing with us, and much TIME, MONEY AND PERPLEXITY SAVED. We are interested in ALL manufacturers, but in no particular one to the disadvantage of another. The most valuable and useful machines are found scattered among all manufacturers. No one concern makes ALL the best. We ship machines from the factories where they are made, so that freights cost patrons no more than if purchased of the manufacturers. WE ASK BUT ONE PROFIT. Read the following list of articles; there are many others not enumerated. Price Lists furnished on application.

## Wood Working Machines and Supplies.

Blind Slat Tenoning Machines.  
Band Sawing Machines.  
Blind Slat Crimping Machines.  
Belting.  
Brad Drivers.  
Bedstead Machinery.  
Boring Machines.  
Buzz Planers.  
Blind Wiring Machines.  
Blind Stile Mortising Machines.  
Clapboard Planing Machines.  
Circular Saws.  
Cigar Box and Panel Planers.  
Churn Machinery.  
Chair Machinery.  
Dadoing Machines.  
Dovetailing Machines, makes Mortise and Tenon at once, automatic.  
Dowel Machines.  
Daniels Planers.  
Dimension Planers.  
Emery Grinders.  
Emery Wheels.  
French Band Saw Blades.  
Foot Mortising Machines.  
Felloe Rounding Machines.  
Felloe Planers.  
Felloe Bending Machines.

Foot Jig Saws.  
Grinding Machines.  
Gauge and Variety Lathes.  
Grooving Heads.  
Horizontal Boring Machines.  
Hub Boring and Cupping Machines.  
Hand Working Machines.  
Jig Saws.  
Keg Machinery.  
Lath Machinery.  
Long Plane Jointers.  
Machine Cut Lacing.  
Mortising Chisels and Augers.  
Mortis'g Machines, power and foot.  
Moulding Machines.  
Matcher Setter.  
Miter Dovetail Machines.  
Moulding Cutters for all machines.  
Oval Turning Lathes.  
Planing, Tonguing and Grooving Machines.  
Paneling and Carving Machines.  
Panel Raisers.  
Planing Machine Knives.  
Pulleys, Hangers and Shafting.  
Rod, Pin and Dowel Machines.  
Re-sawing Machines.  
Surfacing Machines.

Spoke Machinery.  
Saw Arbors.  
Saw Sharpening Machines.  
Shingle Machines.  
Scroll Saws.  
Side Jointing Machines.  
Saw Tables.  
Saw Mills.  
Stave Jointers.  
Stave Cutter and Head Planers.  
Slat Planing Machines.  
Spoke Tenoning Machines.  
Spoke Throating Machines.  
Spoke Polishing Machines.  
Sand Papering Machines.  
Stave and Chair Back Saws.  
Self-Acting Sawing Machines.  
Spool Machinery.  
Saw Benches, with late improvements.  
Tenoning Machines.  
Timber Mortisers.  
Tub and Pail Machinery.  
Turning Lathes.  
Upright Boring Machines.  
Variety Moulding Machines.  
Wood Turning Lathes of every description.

## Iron Working Machines and Supplies.

Axle Lathes.  
Angle Boring Machines.  
Blacksmith's Bolt Cutter and Drill.  
Boilers—Horizontal, Vertical, Tubular and Flue.  
Bolt Cutters and Bolt Headers.  
Belting—Oak Tanned, warranted.  
Boring Mills.  
Centering Machines.  
Chucks, Scroll, 4-Jawed and Drill.  
Crank Planers.  
Centrifugal Pumps.  
Cold Rolled Shafting.  
Caloric Engines.  
Differential Pulley Blocks, with and without Gears.  
Drop Presses.  
Exhaust Fans.  
Emery Grinders.  
Emery Wheels.  
Foot Lathes.  
Fox Lathes.  
Gun Machinery.  
Gear Cutters.

Hot Air Fans.  
Hydraulic Presses.  
Hydraulic Jacks.  
Hoisting Machines.  
Key Seating and Slotting Machines.  
Lacing.  
Lathes, all kinds and sizes.  
Machines for Boring Cylinders.  
Milling Machines.  
Nut Tappers.  
Nut Machines.  
Oil Cans.  
Oil Stones.  
Paint Mills.  
Patent Bolt Head Turners.  
Plunger Pumps.  
Planers, all kinds.  
Pulleys, Hangers and Shafting.  
Pressure Bellows.  
Power Hammers.  
Post Drills.  
Portable Engines—something new.  
Portable Forges.  
Radial Drills.

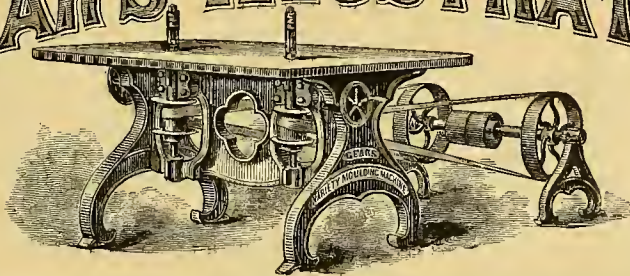
Radius Link Planers.  
Ratchet Drills.  
Rotary Force Pumps.  
Speed Indicators.  
Steam Engines—Portable, Horizontal, Caloric and Hoisting.  
Steam Pumps.  
Steam Governors.  
Steam Jacket and Glue Kettles.  
Steam Gauges.  
Suspension Drills.  
Shaping Machines.  
Slide and Compound Rests.  
Shearing and Punching Machines.  
Slotting Machines.  
Steel Roll Machines.  
Straightening Machines.  
Traverse Drills.  
Turret Lathes.  
Twist Drills.  
Trip Hammers.  
Upright Drills, all kinds.  
Vices, best in use.  
V. rist Pin Lathes.



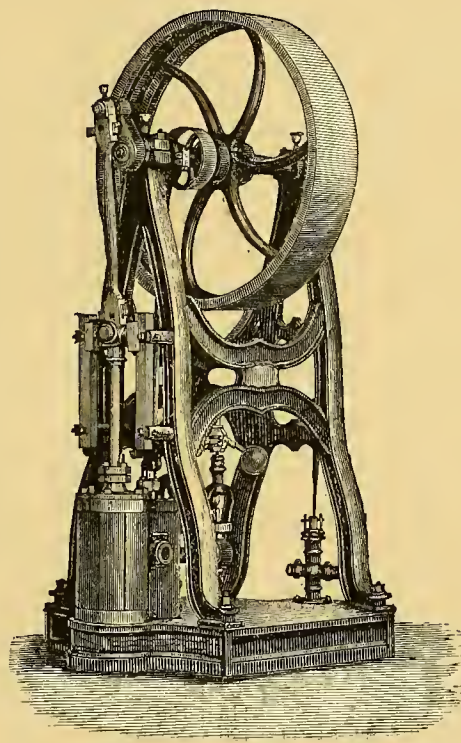




GEAR'S ILLUSTRATED



CATALOGUE



5928

OF WOOD AND IRON WORKING

MACHINERY.

BOSTON, MASS., U. S. A.

PRINTED AT A. S. GEAR'S PRINTING OFFICE, 62 SUDBURY STREET.

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## To the Public.

In presenting this Catalogue to our patrons and the public generally, expressions of cordial thanks are justly due and freely given for the very liberal patronage heretofore bestowed upon this establishment. It is a source of much pleasure and gratification to be assured that the various wants of our numerous patrons and friends have been thus far so satisfactorily supplied, not only with the machinery and articles of our own manufacture, but with the almost numberless products and mechanical appliances of other manufacturers.

It will be our aim in the future, as it has been in the past, to have every machine of our own manufacture made of the very best materials and in the most thorough and workmanlike manner; and as it has been heretofore a special study, so it will be hereafter, to select nothing but the best and latest improved machinery,—and such as can be honestly recommended,—from other manufacturers. From the thorough knowledge gained by long experience in the use of the best machines now built, and possessing unequalled facilities for ascertaining the merits of all *new* machines, we feel warranted in assuring patrons that they cannot fail to be satisfied, both with the price and the quality of the machines they may purchase. Not being personally interested in any particular machine manufactured by other parties, or in league with any particular manufacturer, we can consequently make such selections as are best adapted to the particular work for which they may be required, and at the very lowest manufacturers' prices.

Believing *the best* machine to be always *the cheapest*, and that whatever is for the interest of our patrons is greatly for our own interest, we shall recommend nothing but the most approved machinery made, preferring not to trade rather than sell an inferior article. We confidently believe that we can do better for purchasers than if they dealt directly with the manufacturer, who, of course, is always particularly interested in machines of his own make, while our interest is in the machines which are known to be the best manufactured and which will consequently give the best satisfaction to the purchaser. It will be our endeavor to give every patron a fair equivalent for every dollar's worth of machinery he may purchase, and will warrant every machine to be in all particulars as represented.

In this Catalogue will be found the most approved and standard machines for wood and iron working purposes; but, as is known to all, new and important inventions, and improvements on old machines, are being brought out almost daily, and it will be our endeavor to keep our correspondents well posted in regard to all such inventions and improvements. Some manufacturers prefer to show their machines solely by photographs, and consequently, such machines are not here represented; but, on application, we will furnish any desired information in regard to them.

We trust that in the future, by square dealing and by promptly attending to all orders, we may merit a continuance of the favors so liberally bestowed in the past.

Until recently the business has been conducted under the firm name of A. S. & J. GEAR & Co., but hereafter it will be as herewith subscribed.

Yours truly,

A. S. GEAR.

---

## Reasons in support of our claim to favorable consideration.

1. What we manufacture we exclusively control for the whole country by patents granted to us or purchased by us.
2. Instead of attempting to evade others' rights by manufacturing to get around good machines, we select and purchase them from legal owners.
3. We sell at the market price, and as low as producers, being satisfied with very small profits on large sales.
4. We ship machinery from the factories where it is made, so that the freights are the same as if purchased of the manufacturers.
5. We guarantee to furnish THE LATEST IMPROVED machinery known and that which is best suited to the work to be performed.
6. We sell original and legal productions only, thus preventing trouble with the owners of patents for infringements and costly litigations; and we, also, warrant every machine to be as represented.
7. We give special attention to fitting out shops complete, and by a consolidation of profits and saving of expense incident to selecting, are enabled to furnish all that the various manufacturers produce at as low, if not lower, rates than they can be purchased of others.
8. An experience extending over a period of twenty years, in the examination of all new contrivances as soon as known, and learning from users what they consider the best products, warrants us in saying that we can save purchasers a deal of trouble and money by giving us their patronage.
9. Our interest being also *the purchaser's interest*, we cannot afford to displease or misrepresent, therefore we make all our transactions of mutual benefit to THE GOOD BUILDER, THE PURCHASER and OURSELF.
10. We fill orders as designated by purchasers, or, when it is desired, select and send the best known—support the good and denounce the bad,—and by keeping thoroughly posted, often furnish a good tool or machine but little known at a cost much less than the stiff price demanded for others which are no better.
11. Our unprecedented success warrants us in keeping ordered ahead a large supply of good machinery, besides keeping at our warerooms a larger stock of machines and mechanical devices than is seldom found elsewhere in the country.
12. Send for Catalogue, and Circulars regarding any mechanical product. Look at the list of patrons of our establishment on the third page of cover. We have hundreds of others, many of which have been received recently, which, from want of space, we are prevented from inserting.

# Rules for Calculating the Speed of Drums or Pulleys.

## PROBLEM I.

THE DIAMETER OF THE DRIVEN BEING GIVEN, TO FIND ITS NUMBER OF REVOLUTIONS:

RULE.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the number of revolutions of the driven.

## PROBLEM II.

THE DIAMETER AND REVOLUTIONS OF THE DRIVER BEING GIVEN, TO FIND THE DIAMETER OF THE DRIVEN, THAT SHALL MAKE ANY GIVEN NUMBER OF REVOLUTIONS IN THE SAME TIME:

RULE.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the number of revolutions of the driven; the quotient will be its diameter.

## PROBLEM III.

TO ASCERTAIN THE SIZE OF THE DRIVER:

RULE.—Multiply the diameter of the driven by the number of revolutions you wish it to make, and divide the product by the revolutions of the driver; the quotient will be the size of the driver.

Table, showing the Weight of 1 foot in length of Round Iron, from 1-8 in. to 6 in., in pounds.

Diameter.	Weight in lbs.	Diameter.	Weight in lbs.	Diameter.	Weight in lbs.	Diameter.	Weight in lbs.
$\frac{1}{8}$	.041	$1\frac{5}{8}$	7.010	$3\frac{1}{8}$	25.926	$4\frac{5}{8}$	56.788
$\frac{1}{4}$	.165	$1\frac{3}{4}$	8.128	$3\frac{1}{4}$	28.040	$4\frac{3}{4}$	59.900
$\frac{3}{8}$	.373	$1\frac{1}{2}$	9.333	$3\frac{3}{8}$	30.240	$4\frac{1}{2}$	63.094
$\frac{1}{2}$	.663	2	10.616	$3\frac{1}{2}$	32.512	5	66.752
$\frac{5}{8}$	1.043	$2\frac{1}{8}$	11.988	$3\frac{5}{8}$	34.886	$5\frac{1}{8}$	69.731
$\frac{3}{4}$	1.493	$2\frac{1}{4}$	13.440	$3\frac{3}{4}$	37.332	$5\frac{1}{4}$	73.172
$\frac{7}{8}$	2.032	$2\frac{3}{8}$	14.975	$3\frac{7}{8}$	39.864	$5\frac{3}{8}$	76.700
1	2.654	$2\frac{1}{2}$	16.688	4	42.464	$5\frac{1}{2}$	80.304
$1\frac{1}{8}$	3.360	$2\frac{5}{8}$	18.293	$4\frac{1}{8}$	45.174	$5\frac{5}{8}$	84.001
$1\frac{1}{4}$	4.172	$2\frac{3}{4}$	20.076	$4\frac{1}{4}$	47.952	$5\frac{3}{4}$	87.776
$1\frac{3}{8}$	5.019	$2\frac{7}{8}$	21.944	$4\frac{3}{8}$	50.815	$5\frac{7}{8}$	91.034
$1\frac{1}{2}$	5.972	3	23.888	$4\frac{1}{2}$	53.760	6	95.552

Round Iron, when turned for shafting, reduces the sizes 1-16 of an inch, thus reducing the weight in proportion to its diameter.

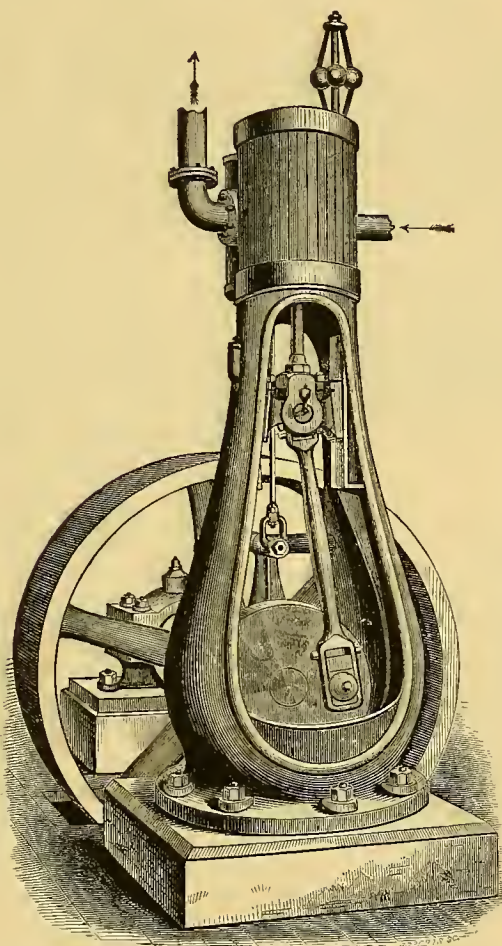
Weight of Square Rolled Iron, from 1-16 inch to 12 inches, and one foot in length.

Size in inches.	Weight in lbs.	Size in inches.	Weight in lbs.	Size in inches.	Weight in lbs.	Size in inches.	Weight in lbs.
1-16	.013	$2\frac{1}{8}$	15.263	$4\frac{3}{8}$	64.700	$7\frac{3}{8}$	303.024
$\frac{1}{8}$	.053	$2\frac{1}{4}$	17.112	$4\frac{1}{4}$	68.448	8	216.336
3-16	.118	$2\frac{3}{8}$	19.066	$4\frac{3}{4}$	72.305	$8\frac{1}{4}$	230.068
$\frac{1}{4}$	.211	$2\frac{1}{2}$	21.120	$4\frac{5}{8}$	76.264	$8\frac{3}{4}$	244.220
$\frac{3}{8}$	.275	$2\frac{5}{8}$	23.292	$4\frac{7}{8}$	80.333	$8\frac{7}{8}$	258.800
$\frac{1}{2}$	.845	$2\frac{3}{4}$	25.560	5	84.480	9	273.792
$\frac{5}{8}$	1.320	$2\frac{7}{8}$	27.939	$5\frac{1}{8}$	88.784	$9\frac{1}{4}$	289.220
$\frac{3}{4}$	1.901	3	30.416	$5\frac{1}{4}$	93.168	$9\frac{3}{4}$	305.056
$\frac{7}{8}$	2.588	$3\frac{1}{8}$	33.010	$5\frac{3}{8}$	97.657	$9\frac{7}{8}$	321.332
1	3.380	$3\frac{1}{4}$	35.704	$5\frac{1}{2}$	102.240	10	337.920
$1\frac{1}{8}$	4.278	$3\frac{3}{8}$	38.503	$5\frac{5}{8}$	106.953	$10\frac{1}{4}$	355.136
$1\frac{1}{4}$	5.280	$3\frac{1}{2}$	41.408	$5\frac{3}{4}$	111.756	$10\frac{3}{4}$	372.672
$1\frac{3}{8}$	6.390	$3\frac{5}{8}$	44.418	$5\frac{7}{8}$	116.671	$10\frac{7}{8}$	390.628
$1\frac{1}{2}$	7.604	$3\frac{3}{4}$	47.534	6	121.664	11	408.960
$1\frac{5}{8}$	8.926	$3\frac{7}{8}$	50.756	$6\frac{1}{8}$	154.012	$11\frac{1}{4}$	427.812
$1\frac{3}{4}$	10.352	4	54.084	7	165.632	$11\frac{3}{4}$	447.024
$1\frac{7}{8}$	11.883	$4\frac{1}{8}$	57.517	$7\frac{1}{4}$	177.672	$11\frac{7}{8}$	466.684
2	13.520	$4\frac{1}{4}$	61.055	$7\frac{1}{2}$	190.136	12	486.656



# Gear's Illustrated Catalogue.

## Patent Vertical Steam Engine.



The Vertical Engine possesses advantages which are destined to bring it into general use for stationary purposes. It has already won its way to universal favor on board our finest screw steamers, where its continuous and rapid working, during long and stormy passages, proves it to be peculiarly fitted to sustain severe labor for long periods. There is no other style of engine which occupies so little room, in which the strains are so well resisted by the framing, or in which the friction is so small and the endurance of all the parts so well secured. The engine shown in the engraving consists of three principal parts: the cylinder, the frame, which is a tapering column of curved outline, having liberal openings in the sides to allow free access to all the working parts within, and the base which elevates the shaft sufficiently for the fly-wheel to clear the floor. The slides and pillow blocks are cast with the column so that they cannot become loose or out of line; the rubbing surfaces are large and easily lubricated. Owing to the vertical position there is no tendency to side wear of cylinder or piston. The packing rings are self-adjusting and work free and tight. These engines, of from two to ten horse-power, are built in quantities and the parts duplicated by special machinery (as in fire-arms and sewing machines), which secures great accuracy and uniformity of workmanship, and allows of any part being quickly and cheaply replaced, when worn or broken by accident. All sizes above a ten horse-power have a bearing outside the fly-wheel, and this bearing, as well as that in the frame, and both ends of the connecting rod, are made self-adjusting to the line of the bearing surfaces, so that if, by the settling of the foundation or other cause, the engine "gets out of line," the bearings will not heat, cut, or thump.



# Deane's Illustrated Catalogue of

## Portable Engine.

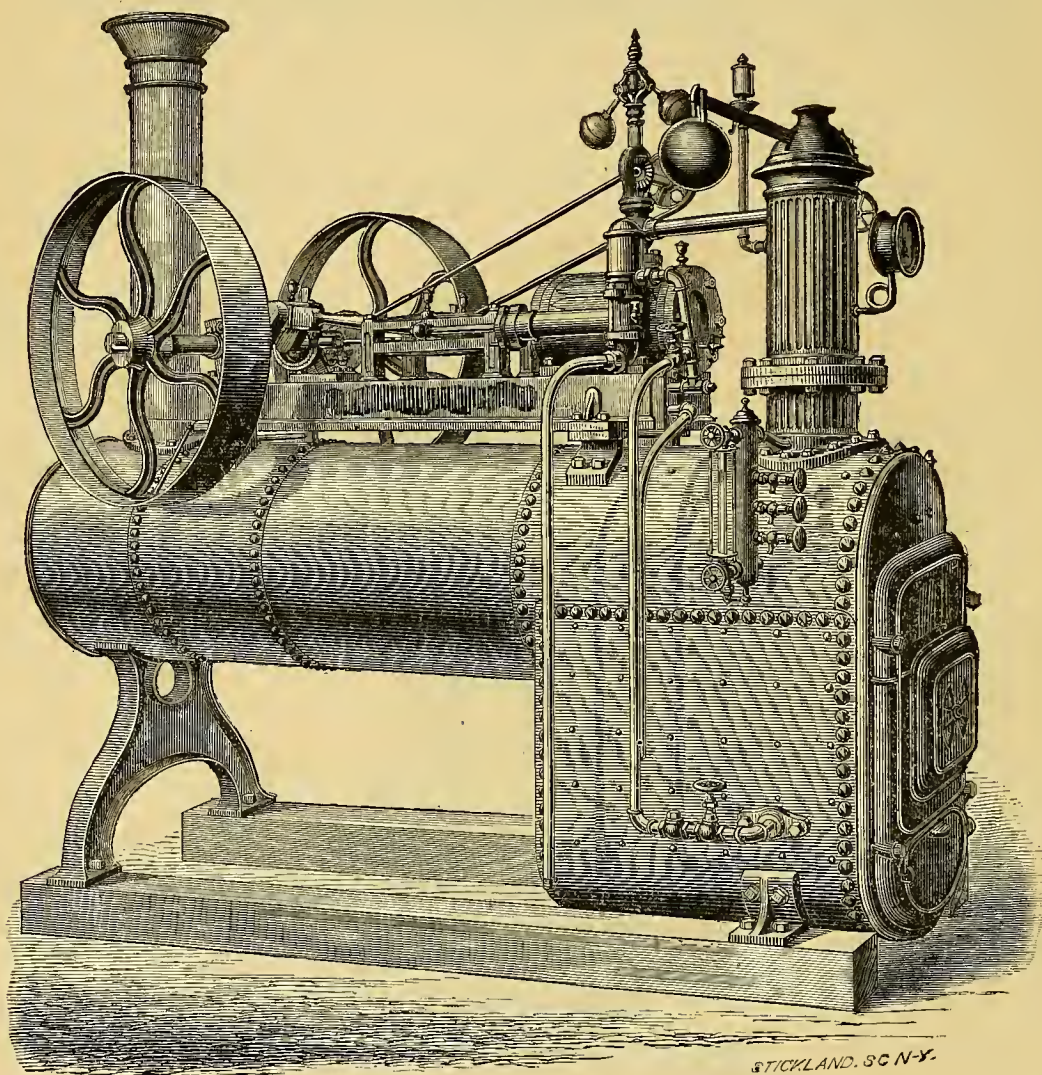


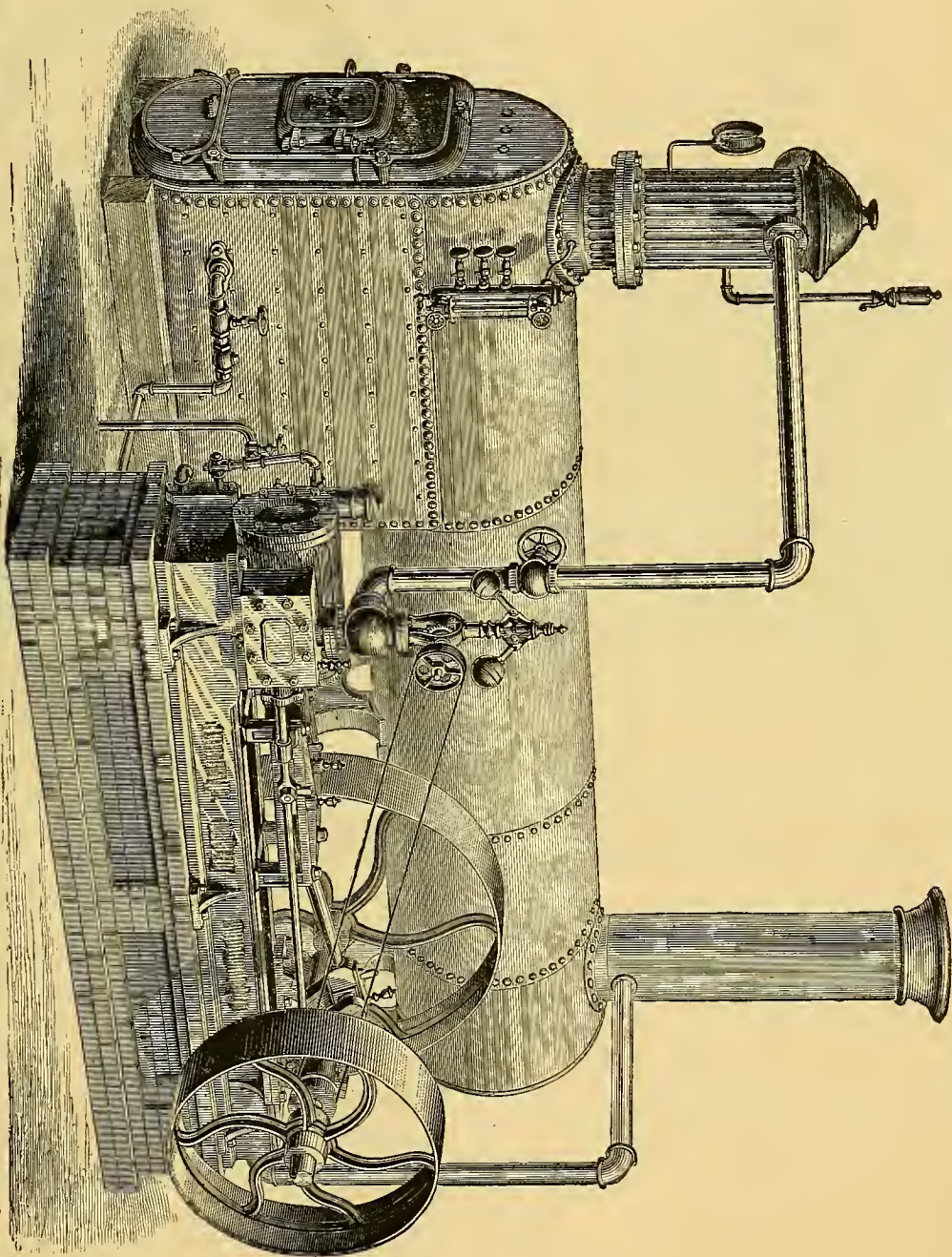
Table and Dimensions of Portable Engines.

NUMBER.	CYLINDER.		BOILER.							FLY WHEEL.		Revolutions per minute.	Estm'd weight of Engine and Boiler in lbs.	Horse-Power as usually rated.
	Diamet'r in inches	Stroke in inches	Diamet'r of Waist.	FIRE BOX.			TUBES.			Diam'ter in in.	Faces in inches			
0	3½	6	23	23	18	16	18	2	41	9&20	3½	250	1,700	3 to 4
1	5	10	24	34	18	26	21	2½	51	24 40	5&6	175	2,700	5 to 6
2	6	10	27	36	22	32	20	3	60	40 40	6	175	3,900	7 to 8
3	7	10	29	36	24	34	22	3	60	30 42	8	175	4,900	9 to 10
4	8	10	32	38	26	36	24	3	68	30 44	8	175	5,800	11 to 12
5	8	12	32	38	26	37	27	3	68	30 48	8&10	150	6,800	13 to 15
6	9	12	33	52	27	37	29	3	82	40 54	8 12	150	7,200	15 to 18
7	10	12	35	52	29	38	34	3	82	44 54	8 12	150	7,700	20 to 25
8	10	16	37	52	31	41	39	3	100	48 60	10 12	130	10,800	25 to 30
9	11	18	39	52	33	48	45	3	112	60 72	12 12	110	12,200	30 to 35
10	12	18	39	52	33	49	45	3	124	60 72	12 15	110	13,850	35 to 40



# Wood & Iron Working Machinery.

Portable Engine, erected as a Stationary.

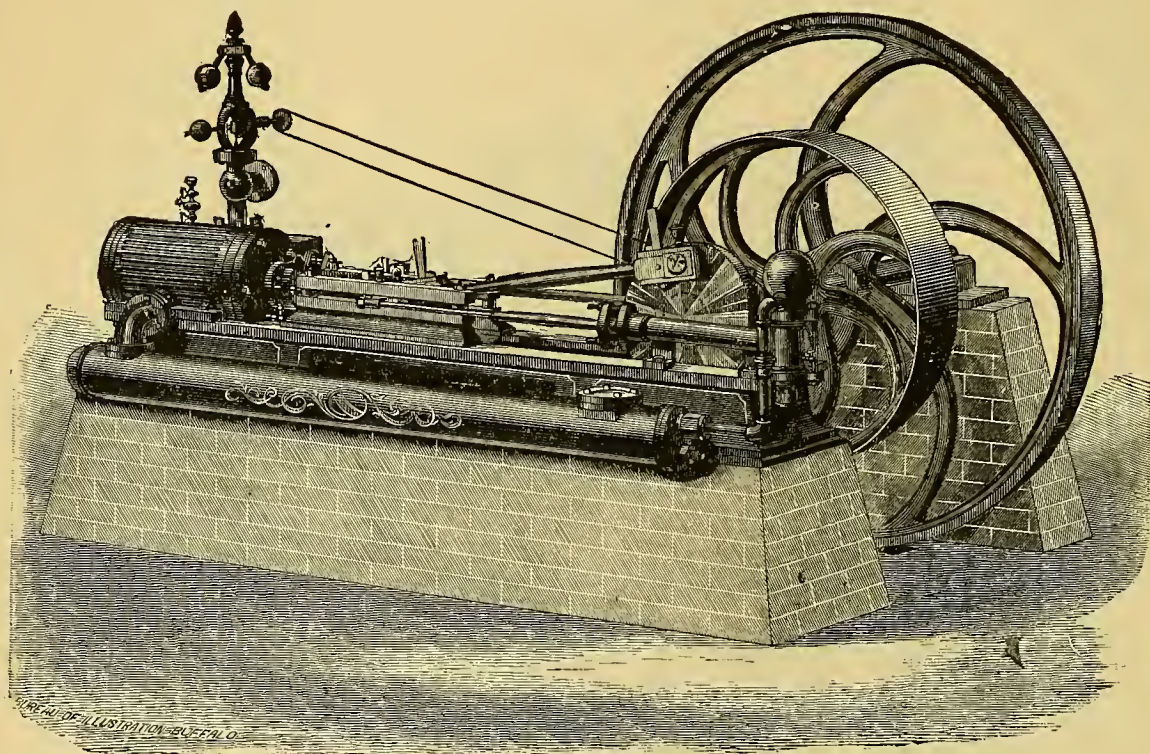


The above cut illustrates some of the important advantages of these "Portables." As regularly made, the engine may, at pleasure of owner, be used on top of boiler, or detached from it, as shown above, thus combining the adaptability of either form for any location, as is sometimes the case when an order specifies that the engine will be used as a stationary, the foundation saddles for engine on top of boiler are left off, as represented by the cut. Outside of the effect on the appearance of the boiler, however, it is immaterial when the engine is so used, whether they are put on or not. It will be necessary to send us a sketch, showing relative position of engine and boiler, and their distance apart, when intended to be run "stationary," in order to send with them suitable connecting pipes, which will be charged for according to extra quantity required over that furnished for Portables.



# Gear's Illustrated Catalogue of

## Slide Valve Engine Nos. 1 to 6.



Number of size.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Horse-power, .....	8	10	12	15	18	20	25	30	40	50	70	90	100	125
Diameter of cylinder (in inches).....	..	7	7½	8	9	10	10	12	12	14	16	18	18	20
Length of stroke.....	..	10	12	12	12	12	15	15	18	18	24	24	30	30
Ordinary number of revolutions.....	..	175	150	150	150	150	140	140	125	125	100	100	80	80
Diameter of steam pipe (in inches).....	..	1½	1½	2	2	2½	2½	3	3	3½	4	4½	4½	5
Diameter of exhaust pipe (in inches). .....	..	2	2½	3	3	3½	3½	4½	4½	5	5½	5½	5½	6
Diameter of pulley (in inches).....	..	30	36	36	36	36	42	42	48	48	60			
Face of pulley (in inches).....	..	8	8	9	11	11	13	13	15	15	17			
Diameter of fly-wheel (in inches).....	..	54	60	60	62	72	84	86	108	110	120			
Weight of fly-wheel (in pounds).....	..	500	600	600	700	900	1200	1500	2000	2500	3000			
Diameter of shaft (in inches).....	..	2½	3½	3½	3½	3½	3½	4½	4½	5½	5½	6½	6½	7½
Length of shaft from center of engine (in feet)..	..	5	5	5	5	5½	6	6	7	7	8	8	8	8
Length of bed frame (in feet).....	..	6½	7½	7½	7½	7½	8½	8½	10½	10½	13½	13½	17	17
Width of bed frame (in inches).....	..	16	17	17	18	18	19	19	23	23	27½	27½	31	31
Length of journal (in inches).....	..	6	6½	6½	6½	9½	9½	12	12	12	13½	13½	13½	15

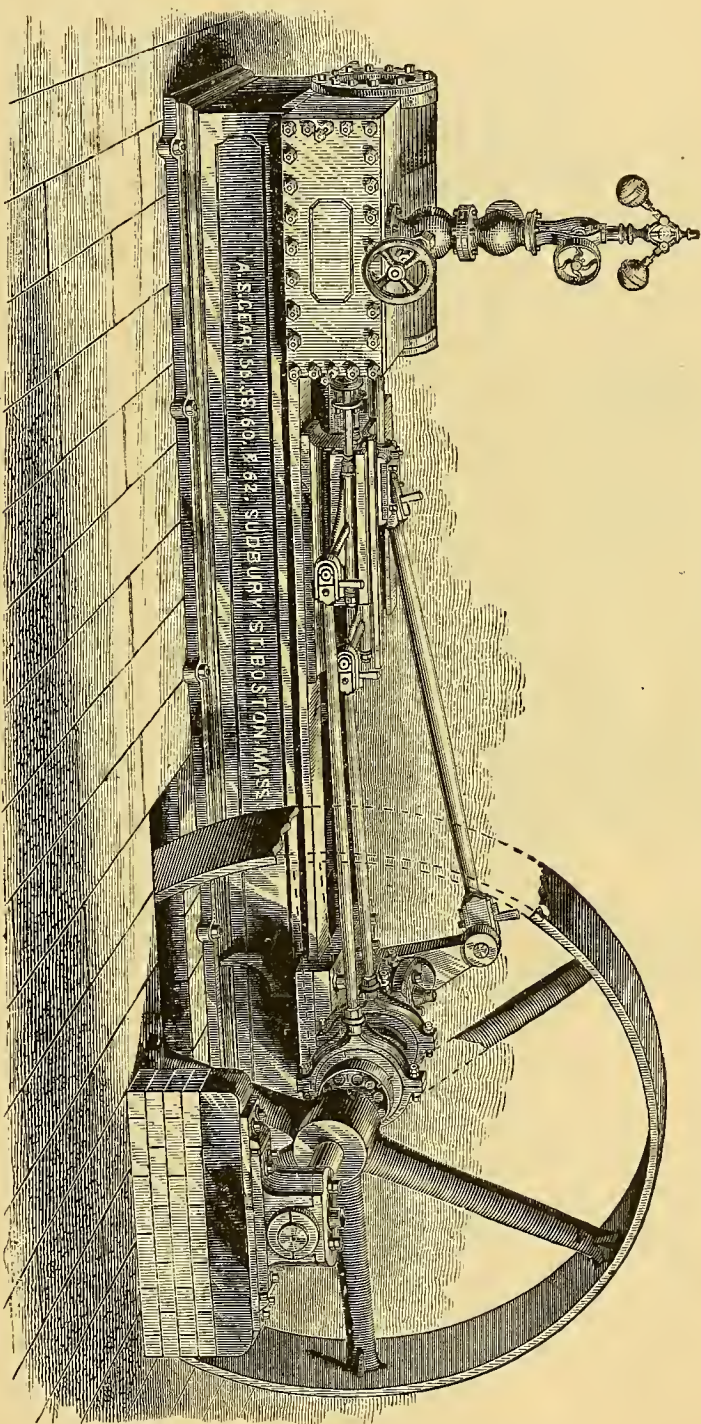
SIZES OF BALANCE-WHEEL PULLEY THAT WILL BE SUBSTITUTED FOR THE FLY-WHEEL AND PULLEY IN ABOVE TABLE AT SAME PRICE.

Diameter (in inches).....	..	54	54	60	60	72	78	84	96	96	96			
Face (in inches).....	..	8	9	9	11	11	13	13	15	15	17			



## Improved Horizontal Stationary Engine,

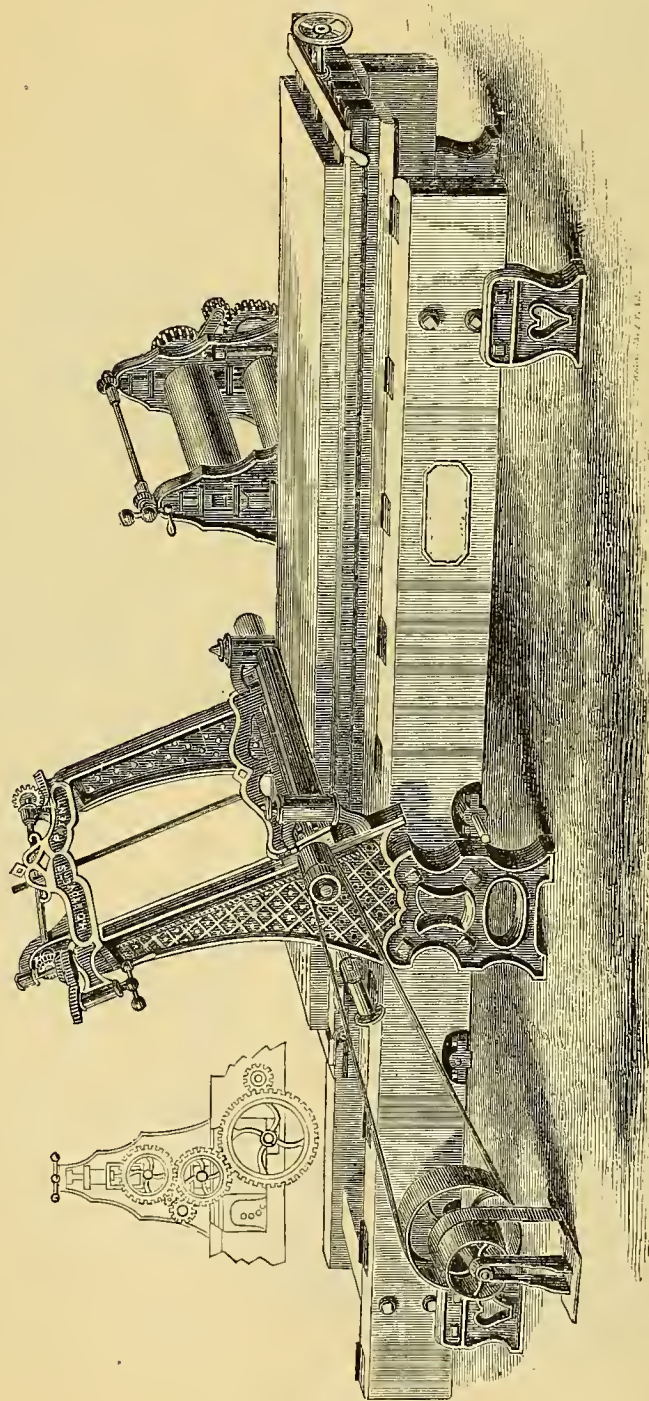
With or without Adjustable Cut-Off, as desired.



All the parts of this engine are of the best material and workmanship. The main journals run in brass quartering boxes. The Cross Head has brass gibs, and the Piston-rods and Crank-pin are of forged steel. It has Oil-cups, Regulating Governor, and Steam Stop-valve, and a Balance Pulley or Fly-wheel. There are twenty-four sizes of this engine, from fifteen to one hundred horse-power. The diameters of cylinders range from eight to twenty inches, with stroke from twelve to thirty-six inches. We have on hand at all times a number of sizes finished complete, ready for delivery, and also a portion of each size—cylinders, &c., (finished)—enabling us to furnish complete and deliver any size at very short notice, and, consequently, at low prices.



## Patent Improved Combination Wood Planer.



The above cut shows the machine as arranged for planing straight and out of wind, and squaring up and surfacing heavy and dimension timber or boards. The Platen is moved backward and forward by means of a Rack-feed, and so arranged as to run back twice as fast as forward, being moved either way by simply moving a lever; and the jar of starting a piece of heavy work is wholly obviated, thus making it impossible to strip any teeth. It is also so formed as to make a heel or cap iron for the Cutting Knives, being adjustable, like a hand planer, for the purpose of cutting fine or heavy, in either hard, soft, straight or heavy grained wood, as the case may be. The Heel Iron, formed on the Cutting Cylinder, is so constructed as to break the chip and cause it to be thrown from the cylinder as soon as cut, thus making the action of the Cutting Cylinder perfectly free by the action of the recesses and pressure edge. The Cutting Cylinder is moved by means of screws attached to *each end of its Cross-head*, which are placed outside of the posts, away from the dust and shavings, and thus securing it exactly parallel with the face of the Platen, either in its elevation or depression. The Cutting Cylinder is run in long boxes, which are lined with Babbitt metal, and supplied with a new and superior arrangement for oiling the boxes, so they can never heat. The Cross-head is secured to the upright post by means of a gib, and can be adjusted very readily, thus preventing any side motion or insecurity; it is also arched in the centre to allow the free exit of shavings. The Feed Rolls, or Woodworth attachment, for surfacing only, is shown in the cut as thrown out of gear, the position they occupy when not required for use; when wanted the Platen is run out of gear and the Feed Rolls are pushed into place, running into gear, and securing themselves perfectly solid as if constructed in the place—the time required to shift from planing straight and out of wind to that of surfacing being merely nothing. The whole machine is built in the most thorough manner, and is warranted in every respect.

The Iron Frame being built wholly of iron is especially adapted for Railroads.

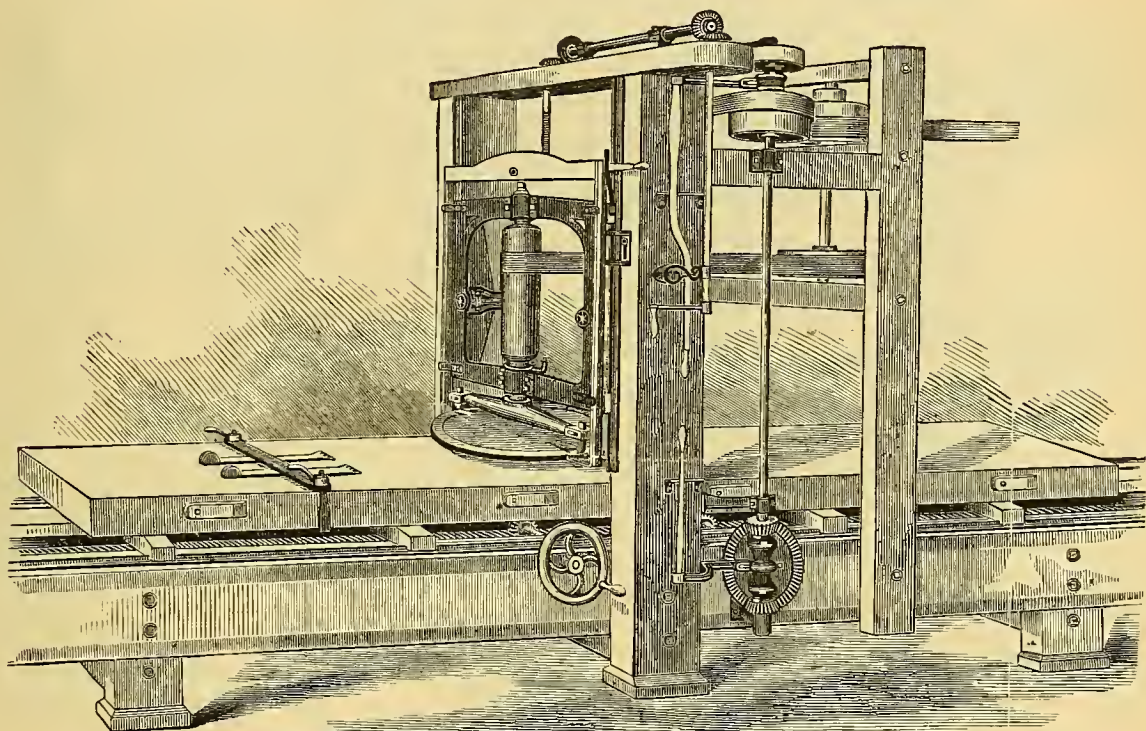
The Heavy Wood Frame is built extra heavy, all the iron work being as heavy as the iron frames.

The Wood Frame is for general work, and is warranted in all respects.



# Wood and Iron Working Machinery.

## Improved Patent Daniels Planing Machine.



### The Most Perfect Dimension Wood Planing Machine in use.

It is made to true out, square up and bevel, with the utmost precision, hard and soft wood, the heaviest dock, ship, bridge, railroad car and mill work, any length or width, and is easily applied to the largest or smallest carpenter's work, machinery, sash and doors, piano fortes, cabinet, coach and carriage work, fancy toys, and almost everything made of wood. It planes both forward and back, and gigs rapidly—both ways if desired. All feed belts are overhead, and shipper handles are convenient and safe to use.

A new PATENT HOLLOW ARM is made of malleable iron, annealed inside and out, making it nearly as tough as wrought iron, and its shape affords far less resistance to the air, requiring less power to operate it than any arm in use. The method of fastening the cutters is not only perfectly safe, but enables it to plane the full rated width, with the dead weight on, thus gaining from three to four inches over all other arms of equal length. These improvements, together with the dead weight and iron rolls, are of such advantage that they are put on all machines, if not otherwise ordered, and no extra charge made.

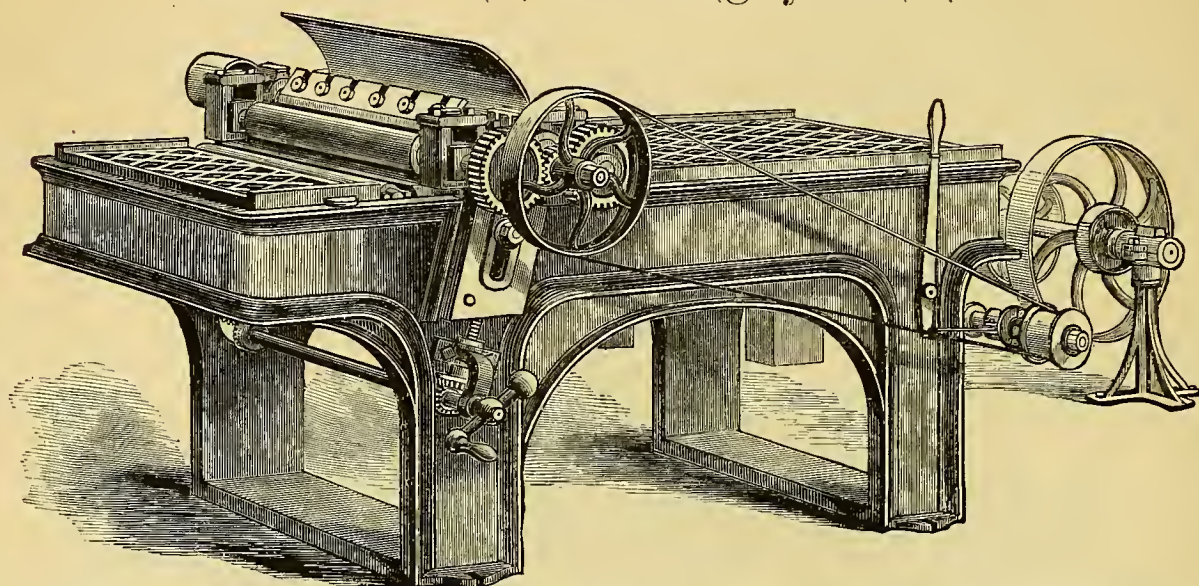
In ordering, care should be had to mention the width required to be planed. All machines less than 18 feet long, and 27 inches wide, will be fitted with a 12 inch pulley, 4 inch face, and should revolve 500 times per minute, which gives 1500 revolutions to the arm. Larger machines will have larger pulleys, and should have speed in proportion to the length of the arm. If desired, the Screw Hold Fast can be attached to the carriage of this machine, at an extra charge, according to the size.

The PRICE LIST of these Planing Machines includes all modern improvements in general use, boxed and delivered on railroads, well marked for shipping.



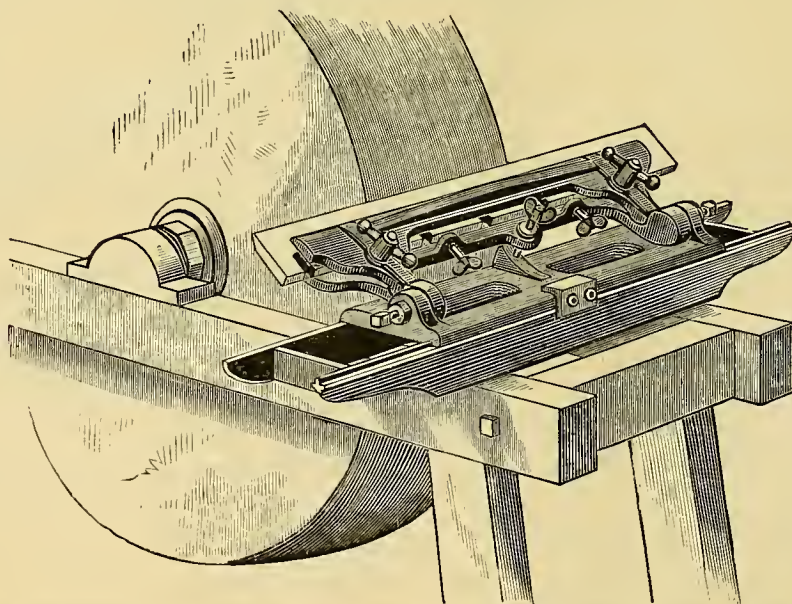
# Gear's Illustrated Catalogue of

## Woodworth Surfacing Machine.



This cut represents a small SURFACING MACHINE, with two Top Feed Rolls attached to the Cutter Head Slides, which move up and down with the Head. This machine is well adapted for shop work—for Carpenters, Box and Cabinet Makers, or any kind of light planing. The Frame is made of cast iron, heavy and substantial; the Cutter Cylinder is of solid cast steel. The Rolls are weighted in a very convenient manner, and will plane stuff to  $3\frac{1}{2}$  inches thick, and 24 inches wide. The tight and loose Pulleys are 12 inches diameter, 6 inch face, and should make 800 revolutions per minute. Weight, 1,400 pounds.

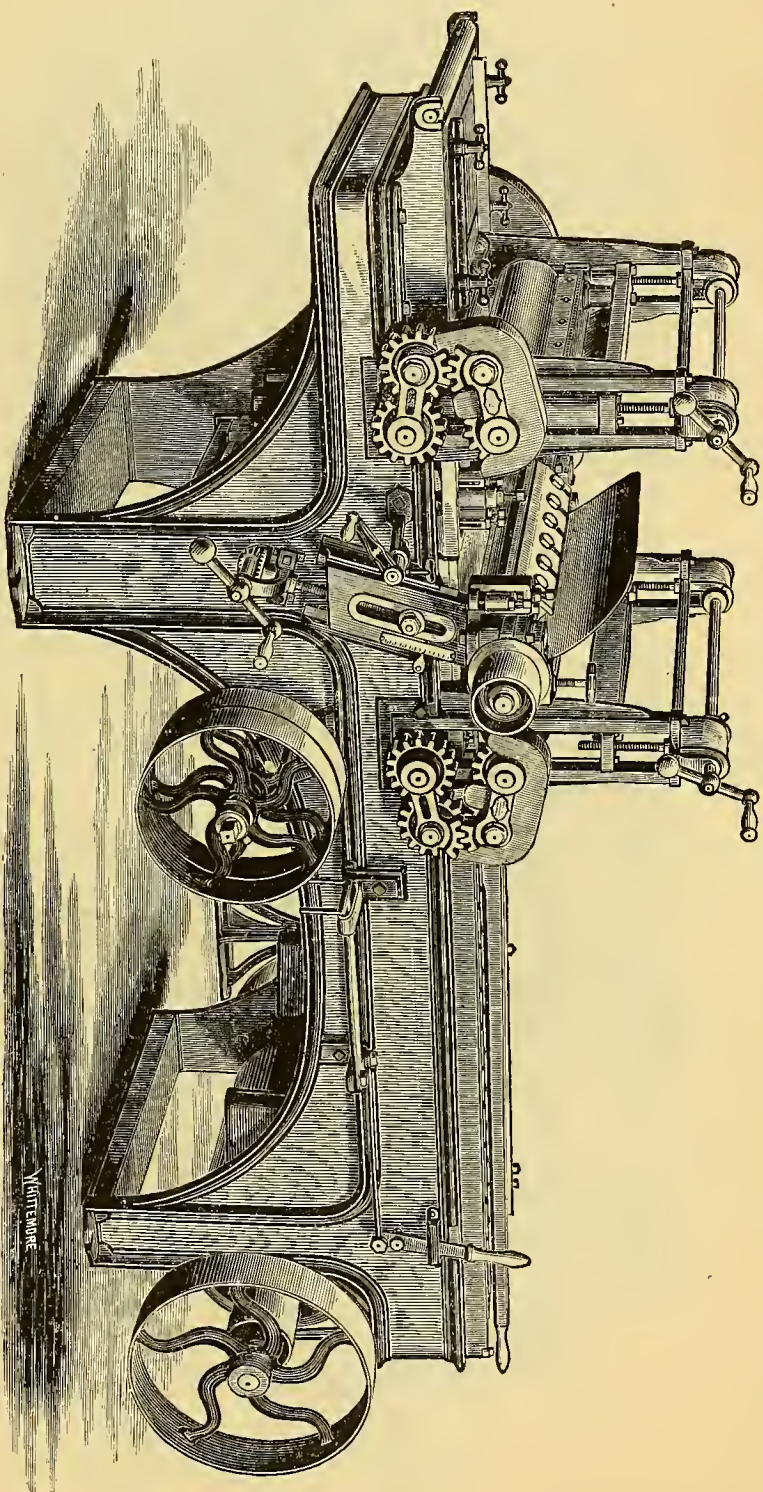
## Grinding Machine.



This machine is constructed particularly for grinding Woodworth Planer Knives and Matcher Cutters. It consists of a Bed and Sliding Carriage. The bed can be placed upon any common grindstone frame. The knife is firmly clamped to the carriage, which is moved back and forth by hand, and can be elevated or depressed to grind any bevel desired. By the use of this machine the knives are kept perfectly straight, and of course will do much more perfect work than if ground by hand. No planing mill is perfect without one, and the cost is but a trifle.



## Patent Improved Woodworth Planing, Tonguing and Grooving Machine.



No. 1. Weight, 3,300 Pounds.

This machine has been constructed to meet the wants of a large class of purchasers throughout the country,—Carpenters and Builders, small Planing Mill owners, Box makers, and many others who do not wish to incur the expense of the larger machines.

It has four five-inch Feed-Rolls, with BURLING'S PATENT EXPANSION FEED GEAR LINKS; also, a patent improved weighting applied to the Rolls in front of the Cutter Head, which gives an equal pressure not affected by any inequality in the lumber. The CUTTER CYLINDER is solid cast steel, running in Patent Self-Oiling Boxes, lined with the best quality of Babbit metal, and has an Index to gauge the thickness of the board. The Matcher Spindles are made of the best cast steel and are lowered below the line of the bed by loosening one bolt to each. The gears are all protected with substantial iron covers, to prevent breakages and accidents.

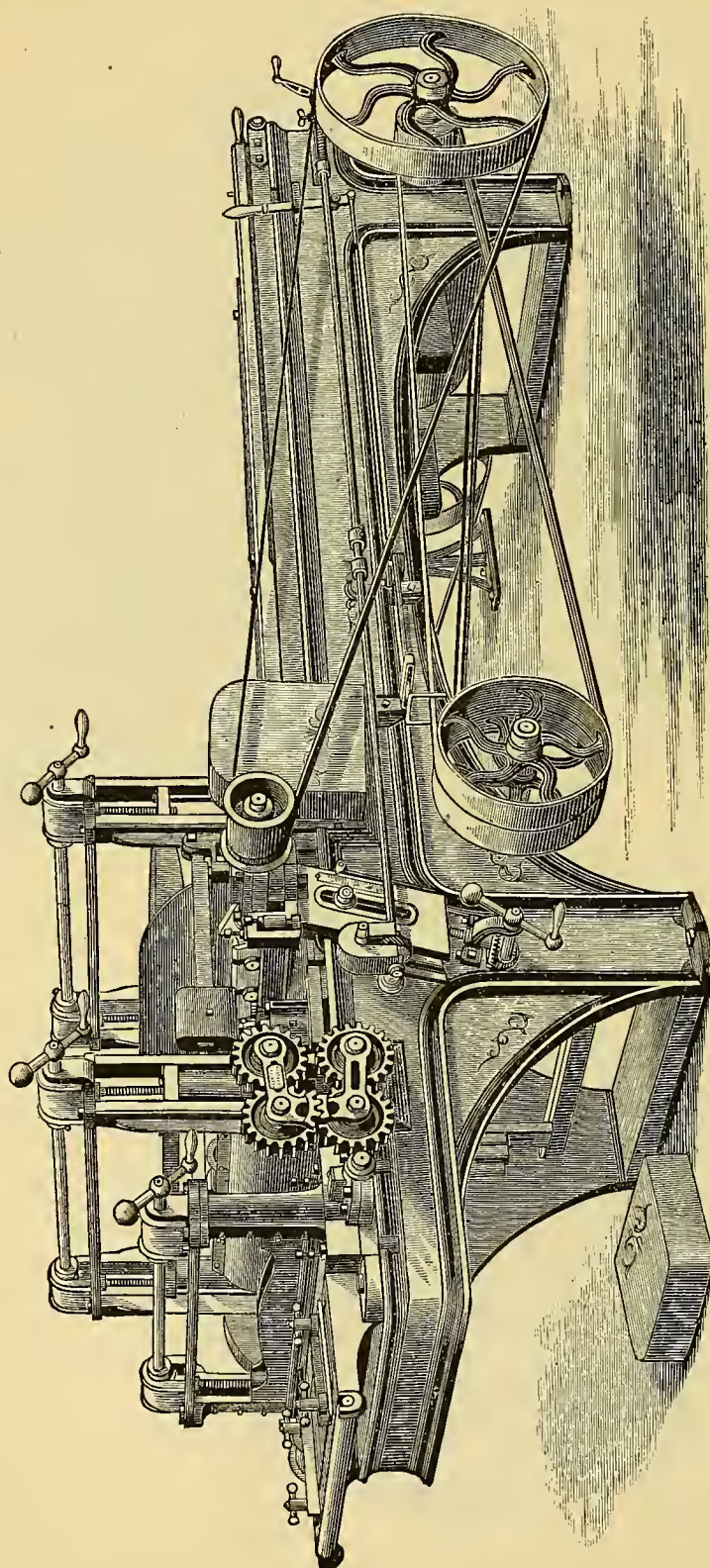
This machine will plane, tongue and groove 14 inches wide, and will plane 24 inches wide and 4 inches thick, when the Matcher Heads are off. The Matcher Head is moved by a crank at the side of the machine.

Tight and loose Pulleys, 12 inches in diameter, 6 inches face, and should make nine hundred revolutions per minute.



## Improved Woodworth Planing, Tonguing and Grooving Machine.

New Patent.



No. 2. Weight, 4,600 Pounds.

This machine has been perfected with great care, and is built from new patterns of the most approved styles, with BURLINGTON'S PATENT EXPANSION FEED GEAR LINKS; also, an IMPROVED WEIGHTED FEED ROLL, self-adjustable to the variations in thickness of lumber. The Rolls are weighted so that the lumber passes through before it reaches the Cutter Head, giving at all times an equal pressure in all irregularities of the lumber which cannot be obtained otherwise. It has four 6-inch Feed Rolls; the Cutter Head is 6 inches diameter, carries three Cutters, is made of solid wrought iron, with cast steel arbors, running in the best Babbitt-lined PATENT SELF-OILING BOXES. The Matcher Spindles are lowered below the surface of the table by a slight turn of a hand wheel to each. All the gears are protected by substantial covers, thereby preventing breakages or accidents.

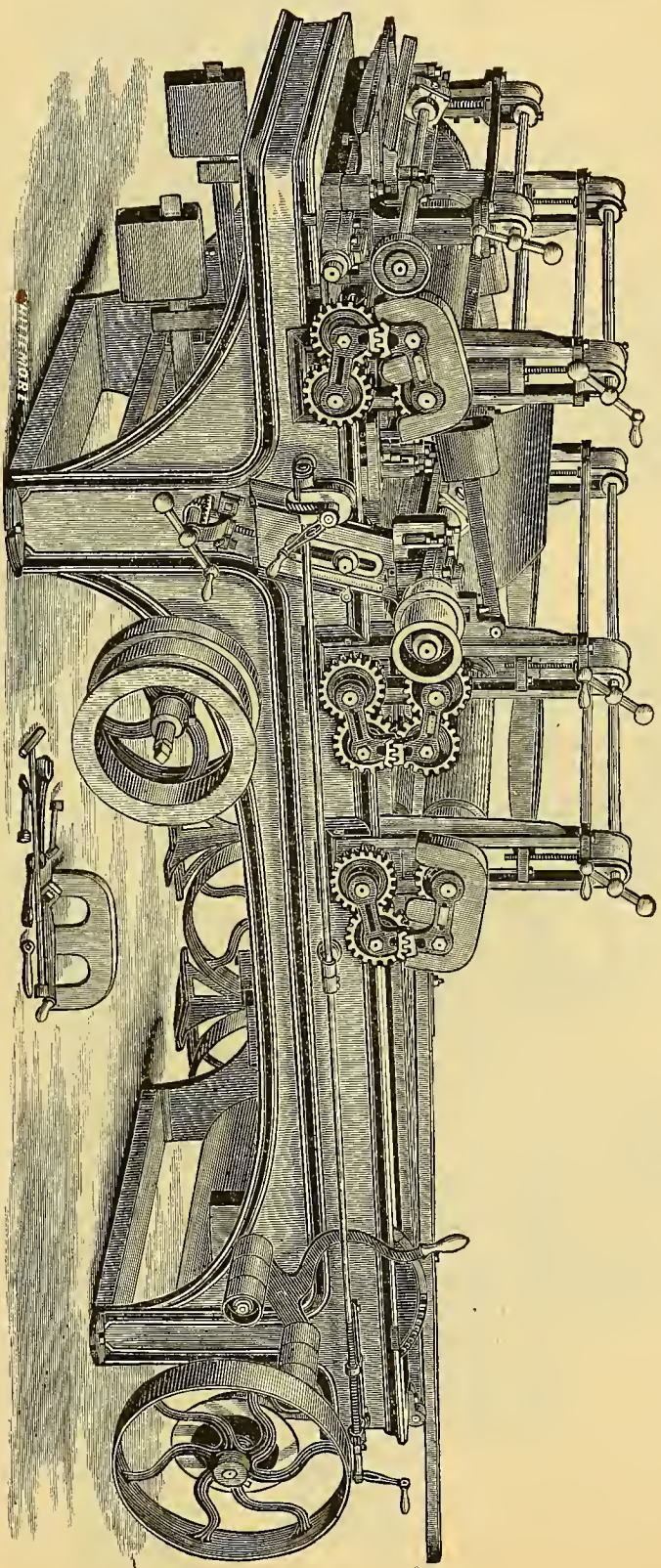
It will plane, tongue and groove fourteen inches wide. Will plane 24 inches wide and 5 inches thick when the Matcher Heads are off. The Matcher Head is moved by a crank, both on the end and side of the machine, with an Index to gage the width and thickness of the board. Tight and loose Pulleys, 14 inches diameter, 6 inch face, and should make 750 revolutions per minute.



# Wood and Iron Working Machinery.

## Improved Woodworth Planing, Tonguing and Grooving Machine.

New Patent.



No. 24. Weight, 6,100 Pounds.

This machine has been constructed with special reference to the wants of Job Planing Mills. It will double surface, tongue and groove, and bead and rabbet at one operation, if desired.

It can be changed from one kind of work to another *instantly*, with the same ease as changing from one width board to another. It is made to tongue and groove the full width it will surface. By this arrangement all trouble and loss of time is avoided by removing the Side Heads and dropping down the Spindles, in the changing from tonguing and grooving to surfacing, and *vice versa*. The Side Heads do not require to be dropped down for any kind of work. The Cutter Head is six inches in diameter, carries six cutters, is made of solid wrought iron, with cast steel arbors, running in the best Babbitt-lined Self-Oiling Boxes.

The Feed Shaft is driven by Cone Pulleys, with three changes, and can be changed from one speed to another with the same ease as changing the speed of a common turning lathe. All the gears are protected by substantial covers, thereby preventing breakages or accidents.

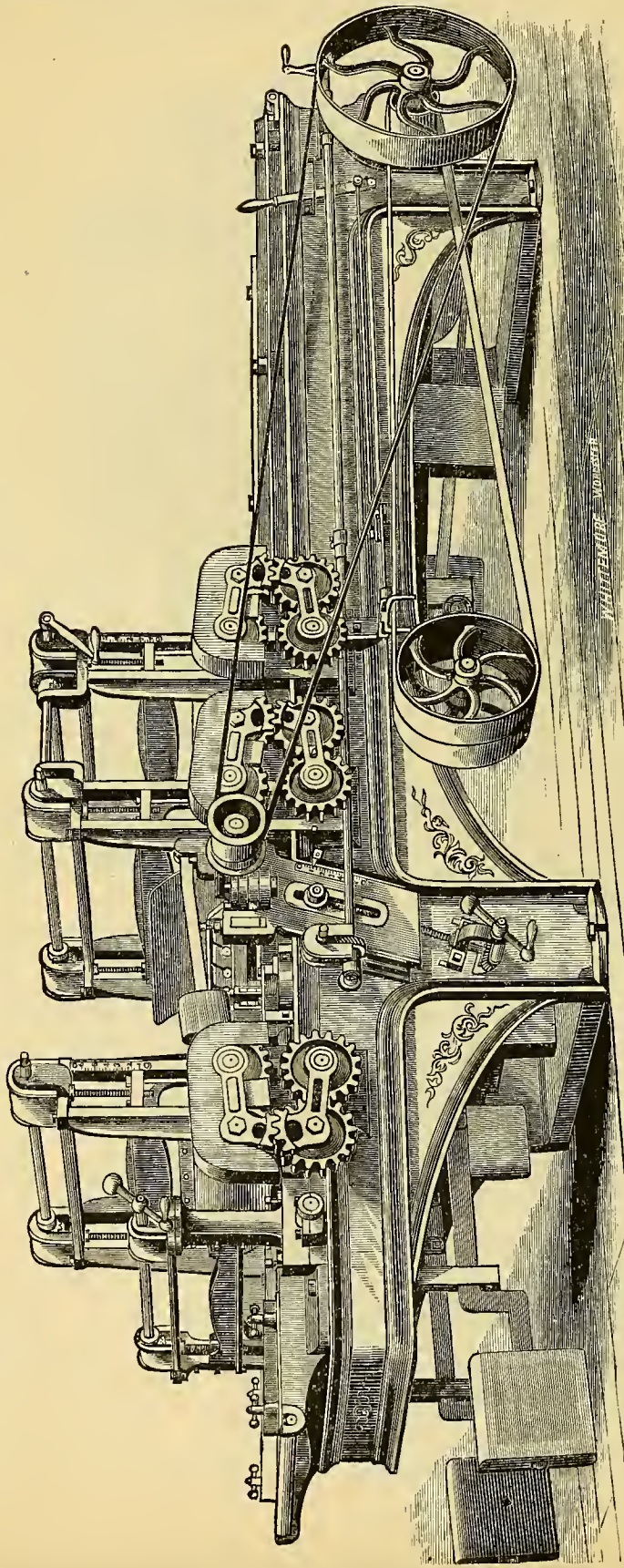
It will plane, tongue and groove 24 inches wide; plane 5 inches thick. Tight and loose Pulleys 14 inches diameter, 6 inch face, and should make 750 revolutions per minute.

Length of Belt, 37 feet of 4 inch, for Upper Cylinder; 18-8-12 feet of 4 inch, for Under Cylinder; 35-9-12 feet of 3 inch, for Matchers; 14-10-12 feet of 3 inch, for Feed.



# Gear's Illustrated Catalogue of

## Patent Improved Woodworth Planing, Tonguing and Grooving Machine.



No. 3. Weight, 7,800 Pounds.

This machine has been perfected with especial reference to the wants of Planing Mills, and of making it the most perfect machine of the kind ever offered to the public. The Frame is thirteen feet long, heavy and substantial. The Bed has a false top, which can be easily removed whenever it needs truing up. It has six 8-inch Feed Rolls, with heavy substantial gears, combined with Burleigh's Patent Expansion Gear Links, which are much superior to any others ever used. It is a very strong feeder. The Cutter Cylinder is 6 inches in diameter, carries three cutters, is made of solid wrought iron, with east steel journals, and has diange pulleys on each end for five inch belts. The Matcher Spindles are lowered down below the surface of the Bed by simply loosening one bolt to each. The Matcher Heads are made of the best of gun metal and carry three Cutters. The Cutter Cylinder and Counter Shafts run in PATENT SELF-OILING BOXES of superior style.

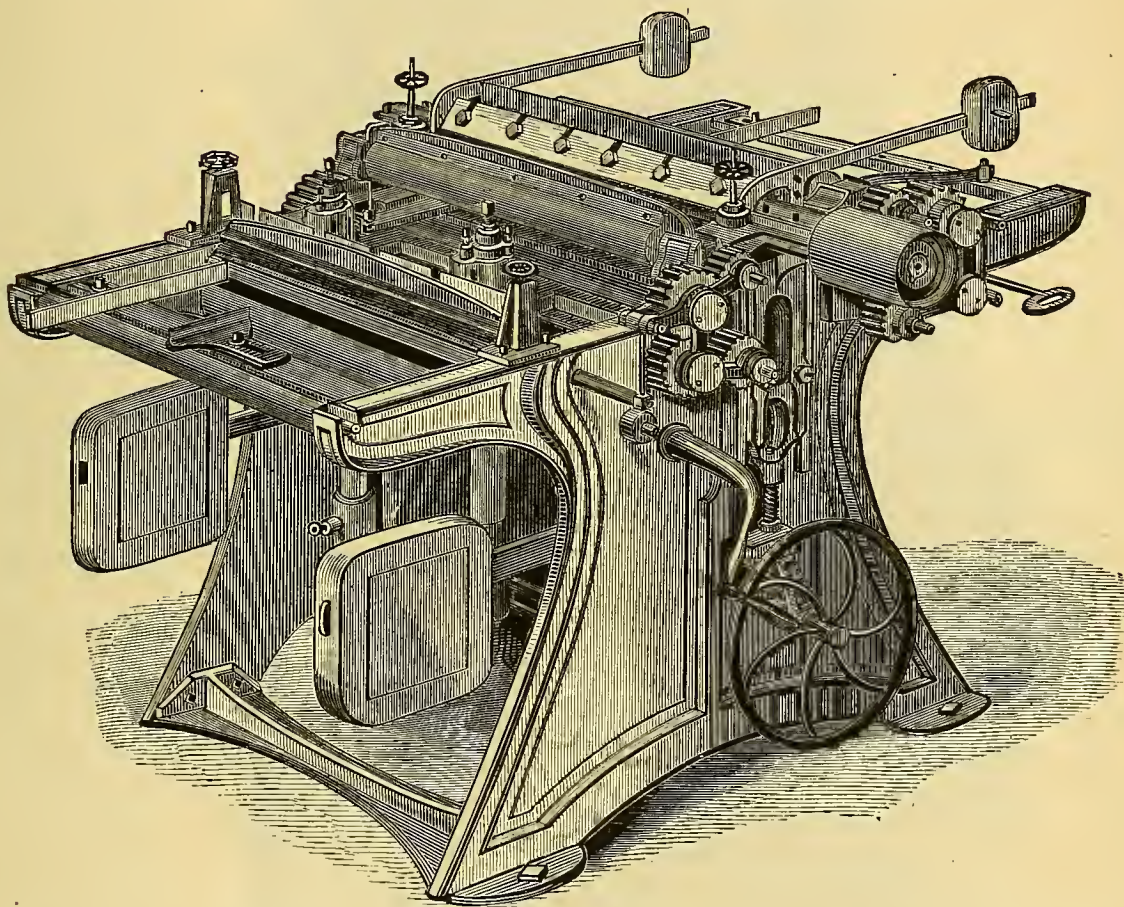
The Feed Rolls and Cutter Cylinder have each an Index for the thickness; the Matcher Bar has an Index for the width, and is adjusted by a crank both at the end and side of the machine. The two sets of Rolls before the Cutters are raised or lowered at the same time, making much saving of time. The Rolls are all weighted, including the Pressure Roll before the Cutters. It will plane, tongue and groove 14 inches wide. Will plane 24 inches wide and 6 inches thick when the Matcher Heads are off. Tight and loose Pulleys 14 inches in diameter, 8-inch face, and should make 750 revolutions per minute.

Length of Belt, 38 6-12 feet of five-inch for Upper Cylinder; 29 2-12 feet of four-inch for Under Cylinder; 39 8-12 feet of three-and-one-half-inch for Matchers; 14 1-12 feet of four-inch for Feed.



# Wood & Iron Working Machinery.

## Poney Planing and Matching Machine.

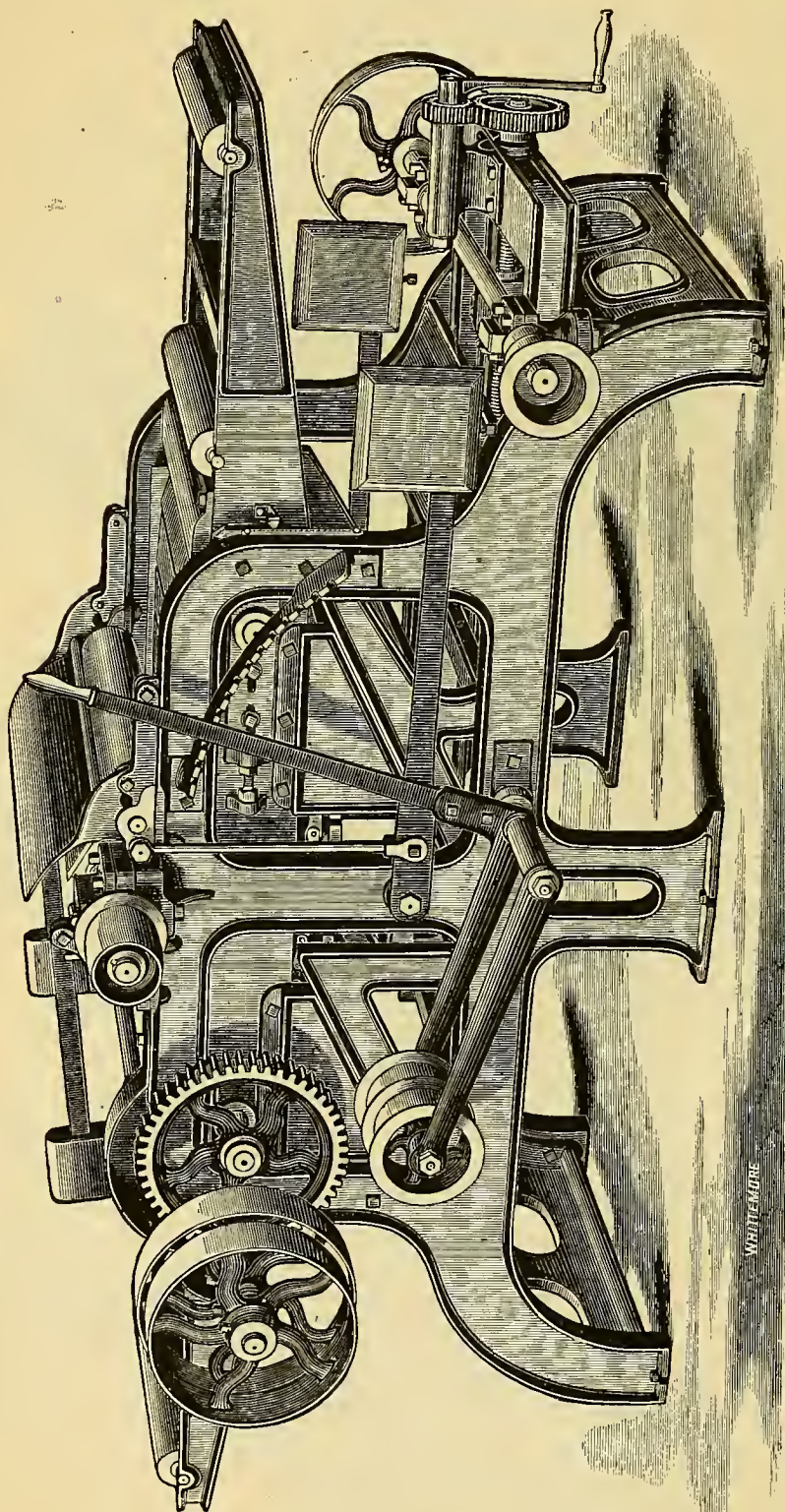


These are the smallest Planers and Matchers built, and being a very excellent machine, at a moderate price, they have had a great run since they were first got out, and are giving universal satisfaction to the many who have them in use. It is a very compact machine, occupying a space of four feet square on the floor. It is fitted with a wrought iron Cylinder with two Knives, and Steel Arbors running in Self-oiling Boxes; gun metal Matcher Heads, three Adjustable Pressure-bars—one of them weighted; the four Rolls are all geared and driven by our Patent Expansion Gearing. The machine planes and matches 13 inches wide and  $3\frac{1}{2}$  inches thick, and the Matcher Shafts may be dropped out of the way in a moment, and make it a plain surfacer to work 24 inches wide. The Cylinder and Top Rolls all raise together by one Hand-wheel. It will plane and match 7,000 to 9,000 feet of flooring per day. We make the Cylinder to drive with one or two belts—the double belt costing a little more than single. Each machine has a Counter-shaft with tight and loose Pulleys 10 inches in diameter, 6 inch face, and should make 900 revolutions per minute—giving the Cylinder 4,000. Weight of machine, without boxing, 2,200 pounds.

Belting required: 13 feet of 4 inch belt for single Pulley Cylinder, or 26 of 4 inch for Double Pulley;  $26\frac{1}{2}$  feet,  $2\frac{1}{2}$  inch belt, for Matcher Shafts; 10 feet 4 inch belt for Feed. The main Driving Belt should be  $5\frac{1}{2}$  inch.



## Farfar or Endless Bed Surface Planer.



Weight, 4,100 Pounds.

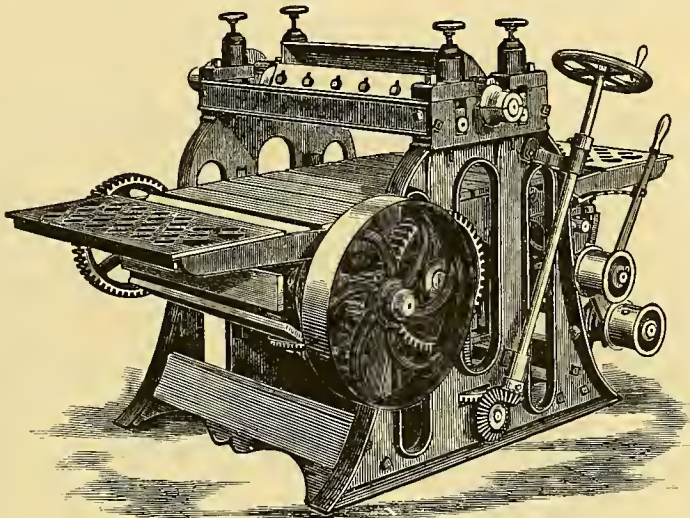
This machine is adapted to the work of Ship Yards, Car Shops, Lumber Mills, or any work where HEAVY or RAPID surfacing is required to be done. It is the heaviest machine ever built of its class, made entirely of iron and steel, very compact, strong throughout, and not liable to get out of repair. The Bed Rails are faced with steel. The Cutter Cylinder is made of solid wrought iron and carries four cutters, which allows much faster feed than other machines. The Rolls are both weighted with independent weights at each end. The Bed is raised or lowered on inclines, so arranged that in changing from one thickness to another there is no loss of time. This machine will plane from  $\frac{1}{4}$  to 6 inches in thickness, and it is especially adapted for green, wet, dry or thick lumber.

We can recommend this machine to be first class in every respect, as regards quality of stock and workmanship, or quantity and quality of work which it will do. Tight and loose Pulleys, 14 inches diameter, 6 inch face, and should make 750 revolutions per minute. Each machine is furnished with a counter-shaft.



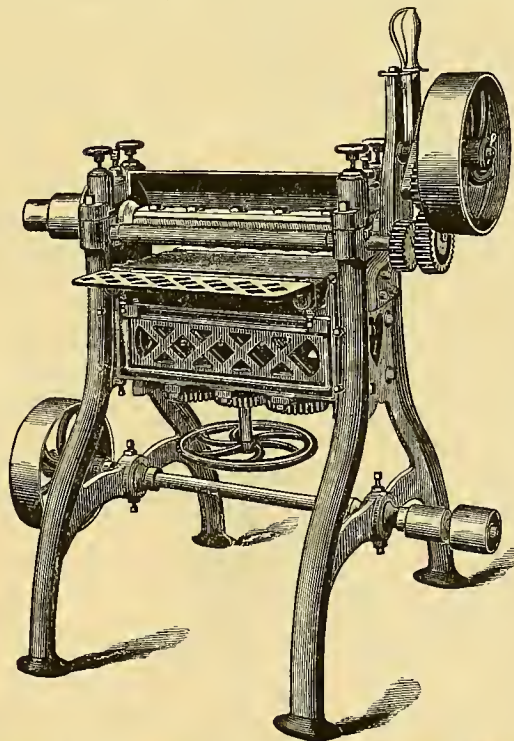
# Wood & Iron Working Machinery.

## Rotary Bed Surface Planer.



This cut represents a Rotary Bed Surfacer, which is adapted to all kinds of planing, both light and heavy. The Bed Rails are faced with hardened steel. The Cutter Cylinder carries three Cutters. The Feed is back geared, making it a faster and stronger feed than any other machine made. The Bed Rail is gibbed on to the Frame, and raised or lowered by screws, and is easily changed from one thickness to another without loss of time. These machines are built to plane from 24 to 30 inches in width, and 10 inches thick.

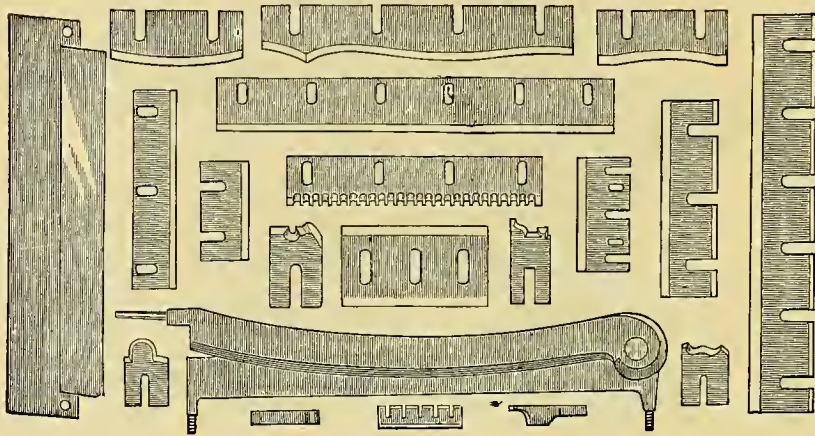
## Improved Panel or Surface Planer.



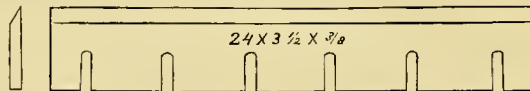
This machine is adapted to the work of Cabinet Furniture Makers, Organ Makers, Car Builders, or for any work where an *extra* smooth surface is required. It is made entirely of iron and steel, very compact, strong throughout, and not liable to get out of repair. The Cutter Cylinder is made of solid steel, and carries two cutters. It has, also, an improved reversible feed. There are eight different sizes, and they are made to plane from 12 to 36 inches wide and from 3 to 5 inches in thickness.



## Planing Knives.



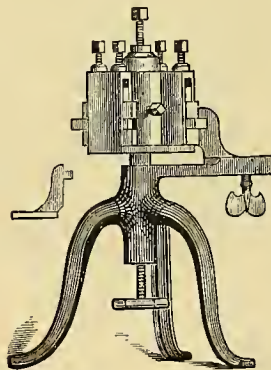
We can furnish Planing Knives of any style or dimension, at short notice. The following directions should be observed when ordering Planing, Matching or Moulding Knives:



### DIRECTIONS FOR ORDERING KNIVES.

Place the knife face down upon the paper; mark around to give the length, width and position of the slots; then turn the knife upon the end and mark around to give the thickness and bevel. Be careful and give original dimensions on the pattern, thus— $24 \times 3 \frac{1}{2} \times \frac{7}{8}$ .

## Machine for Setting Matcher Cutters.



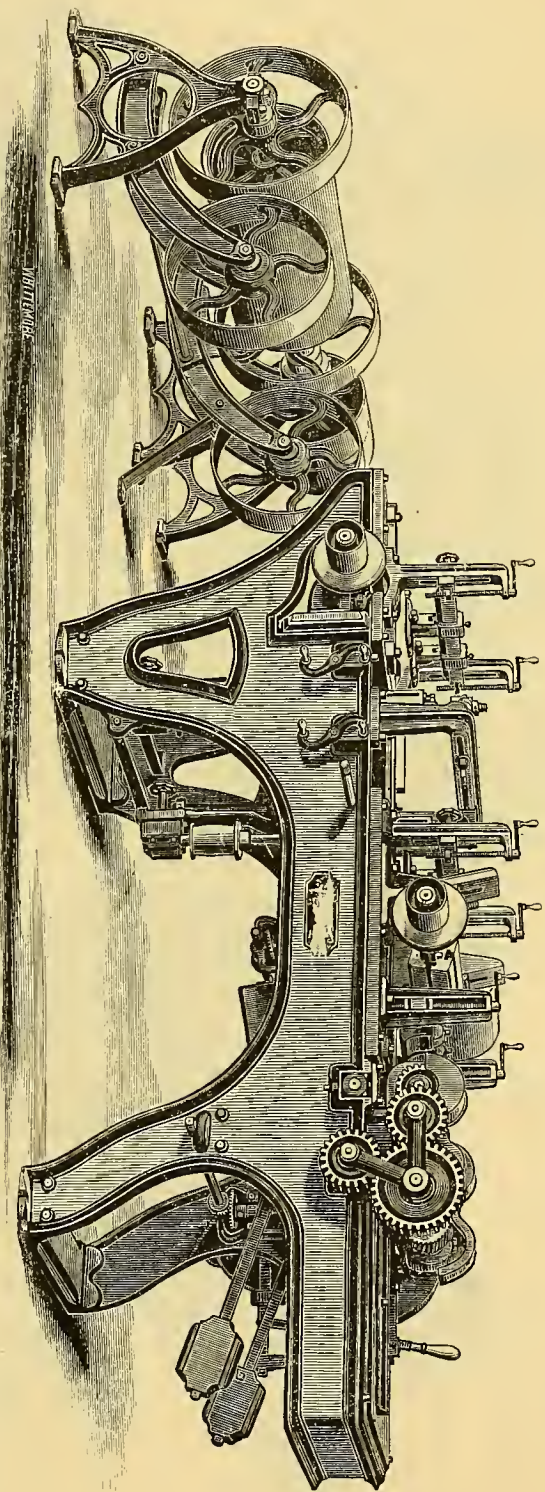
This machine, as its name indicates, is made for setting the Cutters in Matcher Heads. It is perfectly adapted to the purpose for which it is designed; quickly adjusted to suit all sizes of cutters; a great labor-saving machine, considering its cost, and parties using Matchers cannot afford to do without it.

The cut represents the machine with a Matcher Head on it, showing the manner in which the cutters are set.



# Wood and Iron Working Machinery.

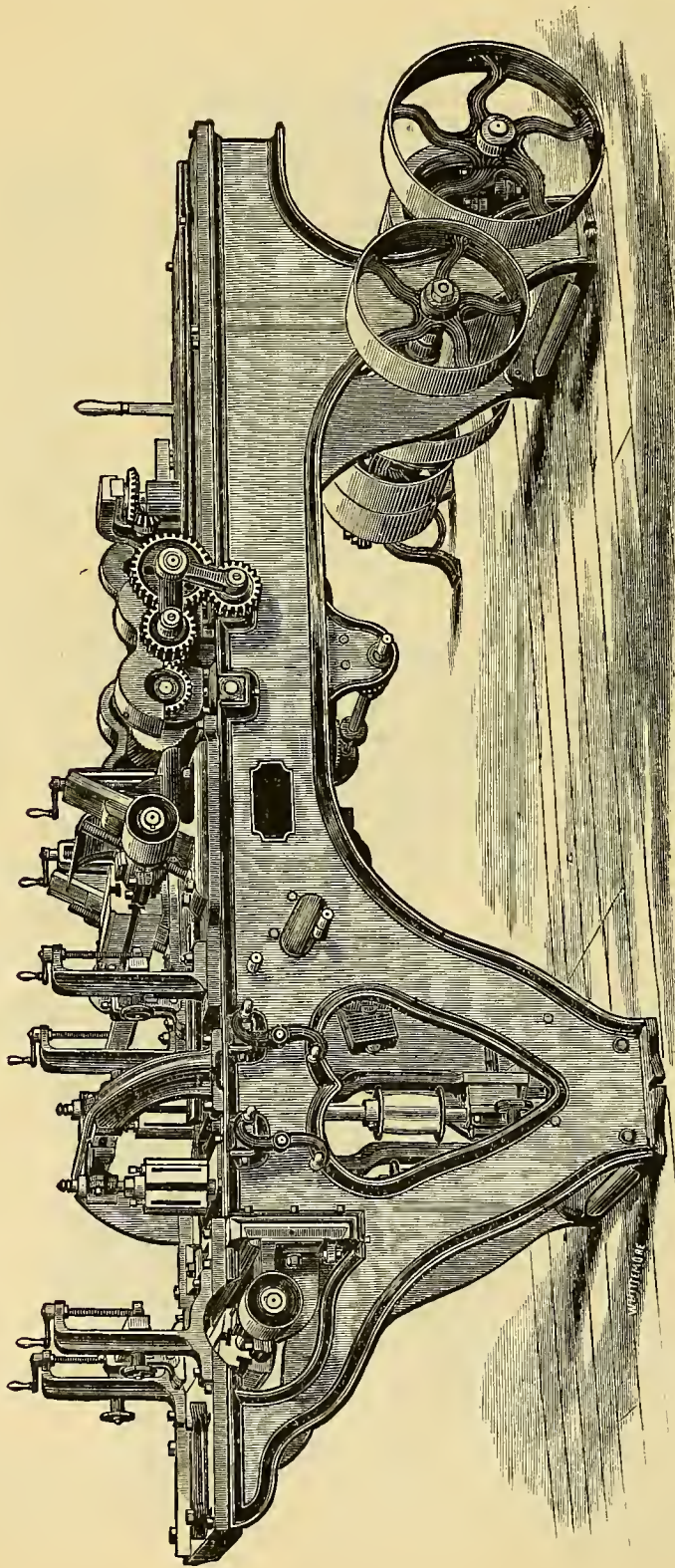
## Lee's Patent Four-Sided Moulding Machine.



This is an extra large, heavy and powerful machine, and recent improvements make it one of the most valuable moulders in the market. It has four-sided wrought iron slotted Cutter Heads, 15 inches long, with  $\frac{3}{8}$  bolts and wrought iron caps for holding the cutters. It will plane two sides, tongue, groove and bead 14 inches wide, and is also adapted to the smallest mouldings. The upper and lower Heads are hinged on both ends. The Under Head can be drawn out of the frame to set and sharpen the cutters. The Arbors and Feed Shafts are of cast steel, running in the most approved metal-lined boxes. The Upright Spindles can be moved both vertically and horizontally while in motion. They have an extra bearing above the Cutter Head, of recent invention, which is readily removed when the heads are to be taken off, and which enables the Side Heads to do as perfect work as the others. This machine has the PATENT COMBINATION HEAD. It also has the NEW PATENT FEED ARRANGEMENT, consisting of two sets of Double Feed Rolls, heavily weighted. Both sets of rolls are operated at the same time with screws and gears under the bed, and are fitted up with strong and powerful gearing well protected with covers. There are three Adjustable Feed Rolls on each top shaft, making it an extraordinary strong feeding machine. There is a shoe on the weighted Pressure Bar in front of the Cutter-Head, holding the stuff firmly close to the cutter. The top Cutter-Head is raised with screws and gears under the bed. The device for holding the moulding back of the head consists of two slotted uprights and a bar, with a vise arrangement for holding a piece to conform to the moulding. The bar may be raised out of level in order to carry the moulding up to the guide when necessary, and is held firmly in place with bolts and hand wheels. The same device is used for holding the moulding over the lower Cutter-Head. The guides are all adjusted at once with one screw. The Side-Heads are operated with screws and cranks, as shown on the side of the frame, in the most convenient manner. The tight and loose pulleys are 14 inches in diameter, 6 inch face, and should make 700 revolutions per minute. Weight, 3,000 pounds. Boxing extra.



## New and Improved Moulding Machine.



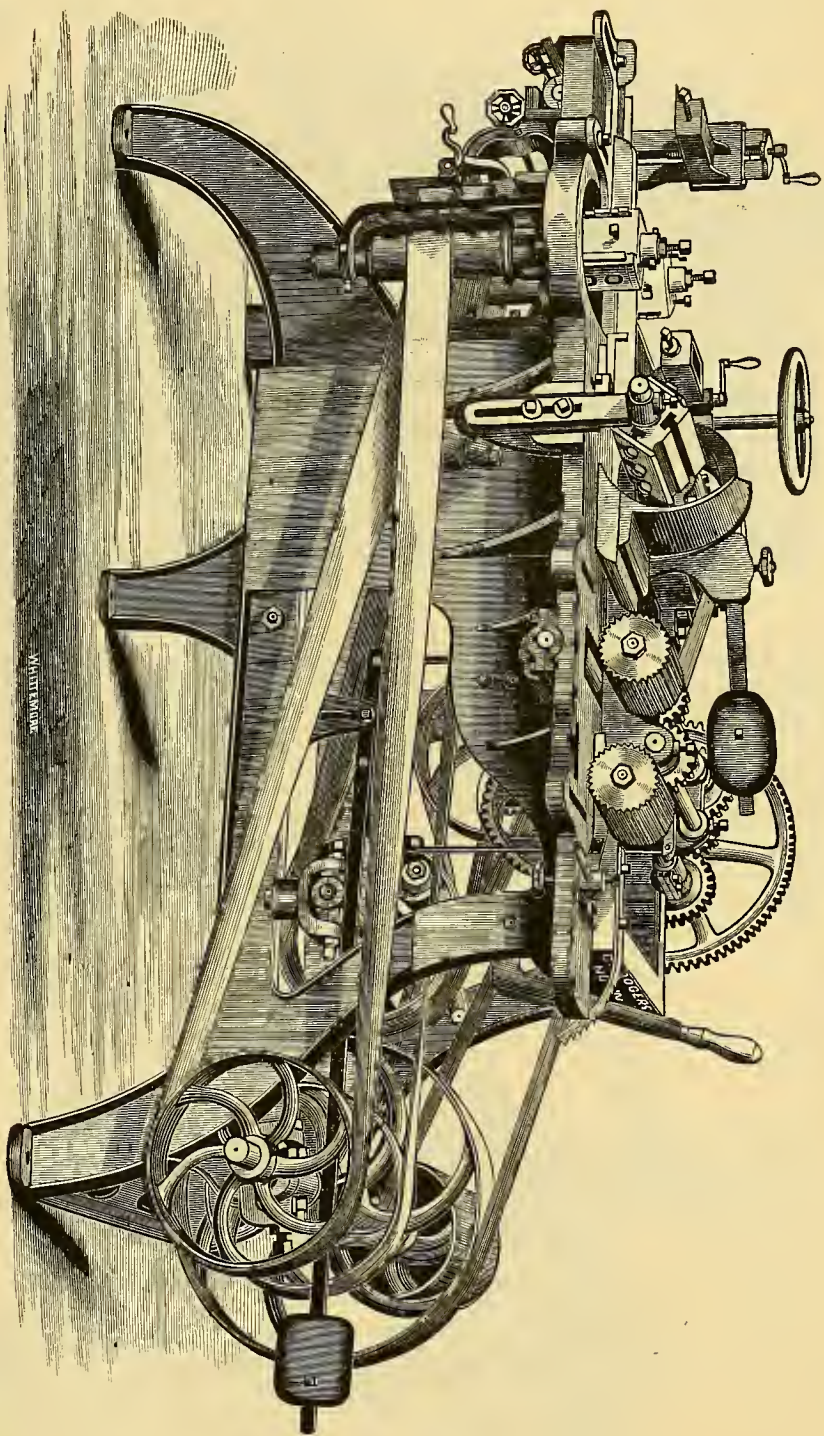
No. 14.

This is a new moulder, just brought out and patented. It is quite different, in many respects, from any other machine, and has all of the modern improvements. The lower Cutter Head is so constructed as to be drawn out of the side of the frame and held in a convenient position for either setting or sharpening the Cutters. It has a parallel Side Feed Roll. It also has a Self-oiling Loose Pulley, warranted to run three months with once oiling. The Drum for driving the Side Heads is so arranged as to run as a Loose Pulley, or as a Tight Drum, by being made in two parts, with a clutch on either end, saving the trouble of taking off the belts when not required for use. The tight and loose pulleys are 12 inches diameter, 6 inch face, and should make 800 revolutions per minute. The Cutter Heads are 12 inches long. Weight, 3,000 pounds.



# Wood and Iron Working Machinery.

## Patent Moulding Machine.

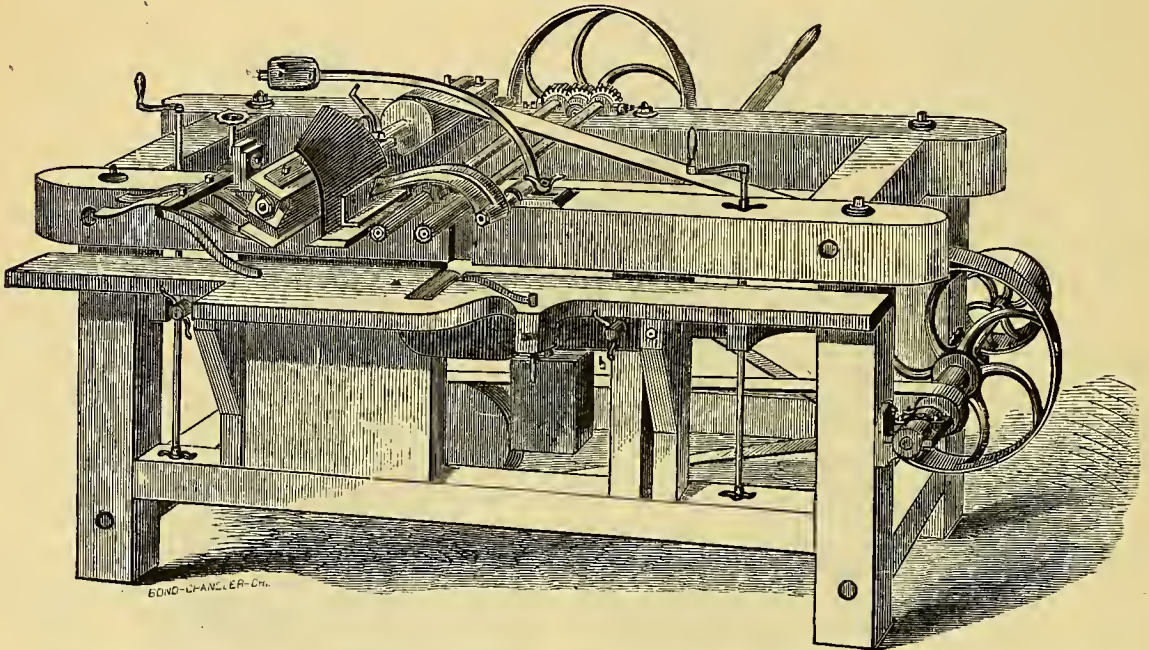


This is a medium size machine, suitable for general work for Carpenters and Builders, and for any mouldings from seven inches down. It will also plane and match narrow flooring and ceiling. The arbors are all steel, and run in self-oiling boxes, and the top arbor has an outside bearing to support the end. The top and bottom Heads are gun metal, slotted on four sides, both seven inches wide, and the Side Heads are iron, with caps, and open seven inches apart. The bed drops 7 inches. The bottom and side arbors are all adjustable, the latter vertically, or on any angle, and move to and from each other. The feed works are weighted, driven by the Friction Feed and Patent Expansion Gearing, and have a friction roll in the bed. The feed has four speeds, from 15 to 50 feet per minute, by a change of pinion gears. It is furnished with all necessary pressure-bars, springs and guides, and every convenience for adjustment. It is built to work three or four sides, as desired. We furnish with each machine the Slotted Heads, top and bottom, and iron Side Heads with caps, and a set of cutters in each. We can furnish, as extras, when wanted, Matcher Heads and Cutters, Moulding Cutters of any pattern, and any of the heads and cutters made for this machine. The tight and loose pulleys on the counter-shaft are ten inches in diameter, five inch face, and should make 1,000 revolutions per minute. Weight of machine, not boxed, 1,500 pounds. Power required to drive moulder, 4 horse-power. All the internal belts for the machine are furnished. The main driving belt should be 4½ inches.



# Gear's Illustrated Catalogue of

## Wood Frame Sash and Moulding Machine.

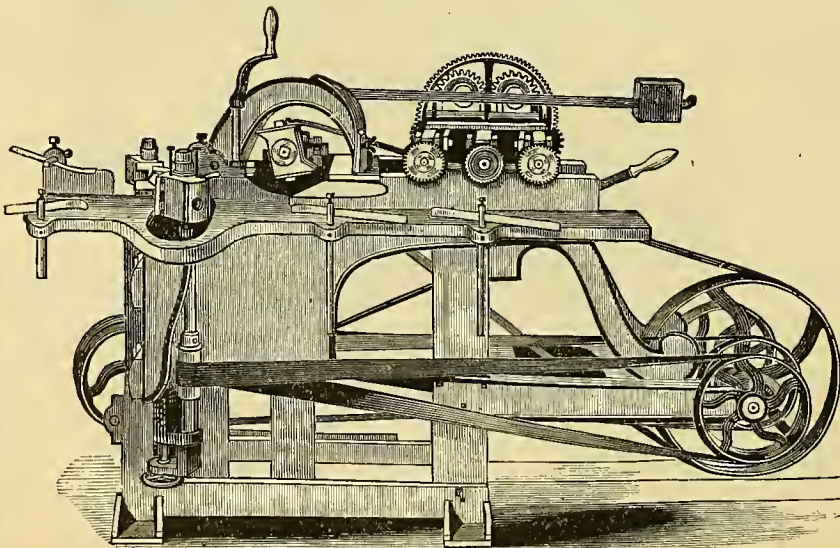


These useful and valuable machines have been so long and favorably known to the public that an extended description is unnecessary. The Frames are made of hard wood, seasoned several years before using, and are finished in a superior manner. The late improvements on it are: The new arrangement of weight and lever to adjust the pressure of the Feed Rolls; the Bonnet Pressure Bar, with shoe close up to the head, to keep stuff firmly down and avoid chattering; the patent Self-oiling Boxes in which the arbors run; the Adjustable Spring Holder, which can be readily adjusted either up or down, or sidewise, in any direction to suit the work.

There is furnished with each machine, unless otherwise ordered, the Planing, Sash and Slat Heads, with cutters in each; and can be furnished as extras, the heads and cutters for doors, panels, mouldings, or any other class of work wanted. There are two sizes of these machines. The large size planes 8 inches wide, and has tight and loose pulleys  $8\frac{1}{2}$  inches in diameter,  $3\frac{1}{2}$  inch face. Should make 890 revolutions per minute. The small size planes 6 inches wide, and has tight and loose pulleys  $6\frac{1}{2}$  inches in diameter, and 3 inch face, which should revolve 900 times per minute. Weight—large size, boxed, 800 pounds. Small size, boxed, 680 pounds.

## Improved Sash and Moulding Machine.

The No. 1 Moulder planes 8 inches wide and sticks the heaviest mouldings. Will also plane and match floor boards 8 inches wide; it works three or four sides. Patented July 6, 1858, and October 24, 1865. It has tight and loose pulleys 10 inches in diameter, 6 inch face, and should make 860 revolutions per minute.

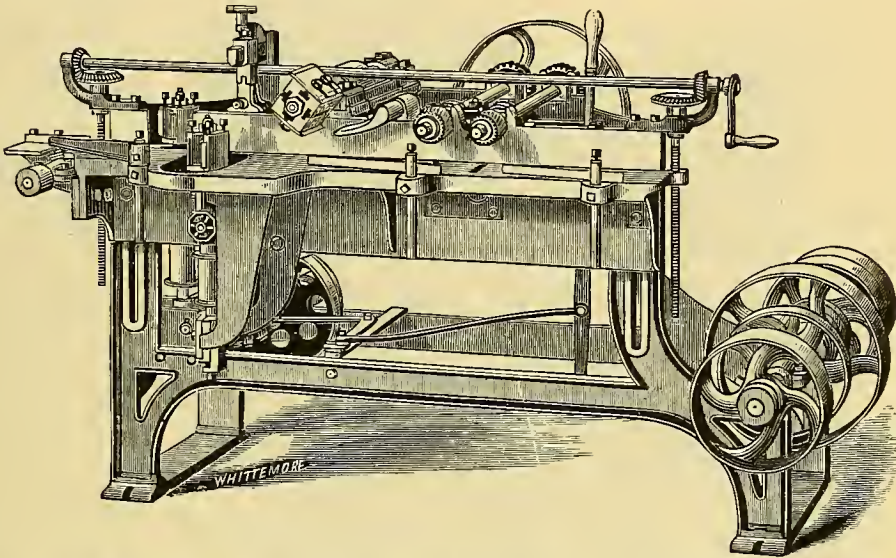


The No. 2 Moulder planes 6 inches wide and will stick mouldings, sash, blind slats, &c.; it will also raise panels, groove door sills, &c., &c.; it works three or four sides. Patented July 6, 1858. It has tight and loose pulleys 9 inches in diameter, 4 inch face, and should make 875 revolutions per minute.



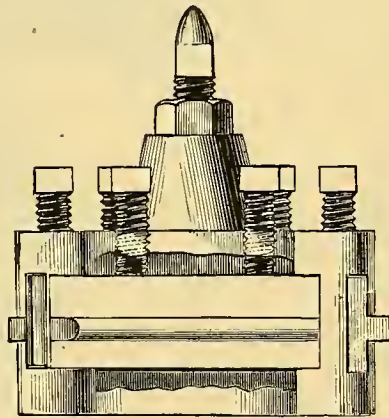
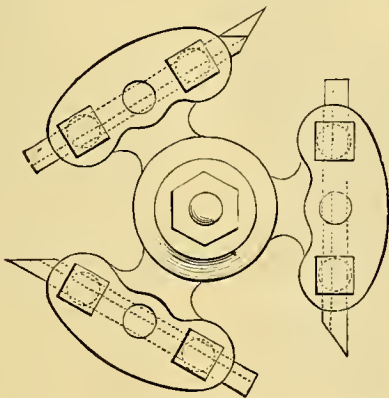
# Wood and Iron Working Machinery.

## Moulding Machine for Door, Sash and Blind Work.



This machine is designed expressly for door, sash and blind work. It has an Under Cutter Head, well adapted for planing blind shades, and has two sets of Feed Rolls, which makes it a very strong feeding machine, enabling the operator to hold his shades more firmly to the bed than can be done with an ordinary blind shade machine. The Bed is raised at both ends with screws, keeping it always level, and is firmly fastened to the frame with bolts working in slots in the frame. It is capable of working door rails 12 inches wide. The tight and loose pulleys are 10 inches in diameter, 4 inch face, and should make 770 revolutions per minute.

## Patent Solid Matching Bits.

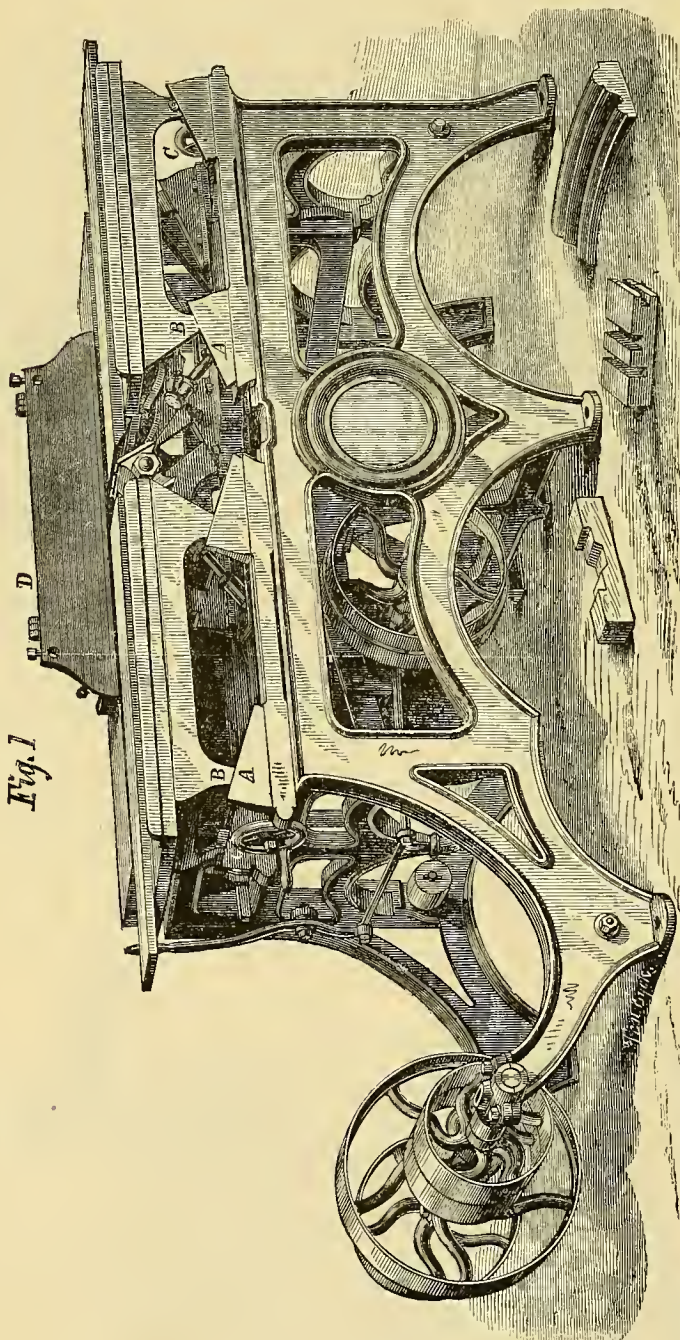


These bits are recommended by those who have used them as being one of the best arrangements for matching lumber extant. Besides being more convenient to set than the common matching bits, they cut a smooth tongue and groove and do not heat. The instant the cut is made the bit is clear of the stuff.



## The Universal Wood-Worker.

Fig. 1

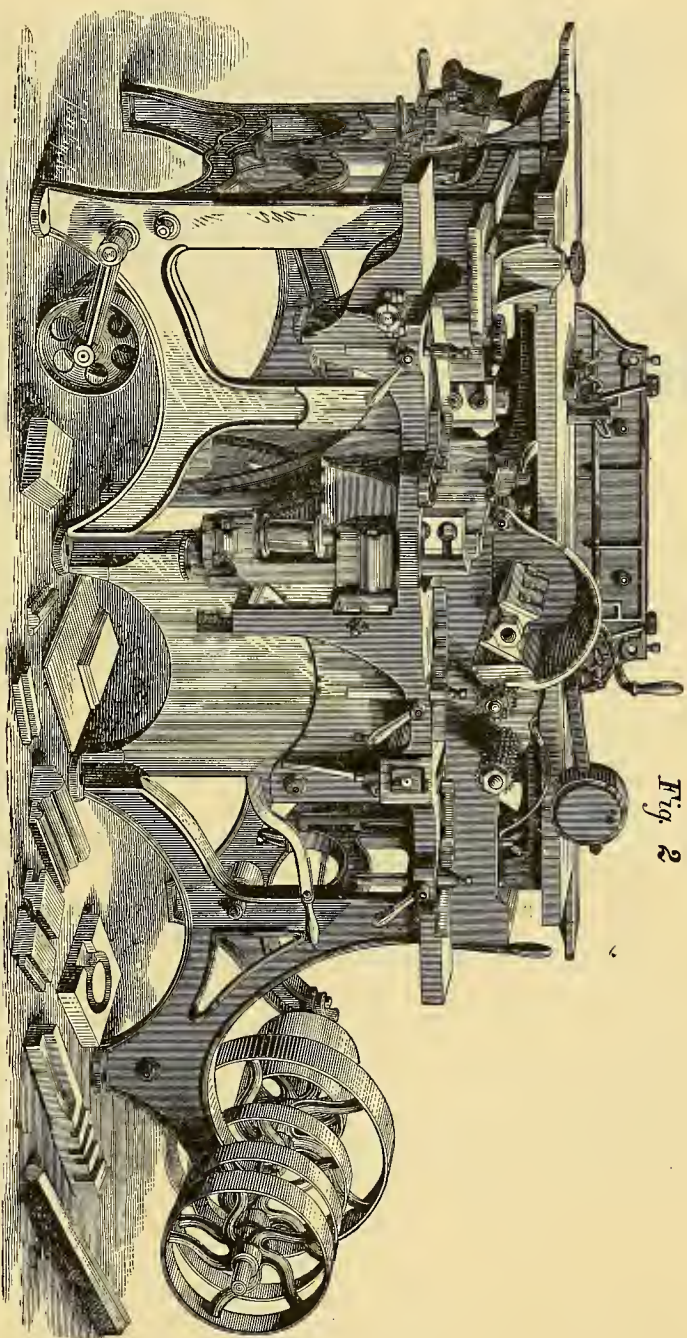


This cut represents the front view of the above-named machine. It is always ready for the work you want it to perform, and is strong and well built. Its parts do not need to be renewed after a brief use, and are not liable to break or become disarranged. No pains and labor have been spared to make it a first class machine. Its construction is simple and easily understood, and requires very little attention to keep it in working order. One of its greatest recommendations is its simplicity. It is a Planer of eight inches width; a Moulding Machine—sticking any light moulding up to an eight inch crown moulding; a Panel Raiser—raising and finishing one or both sides at the same time, for immediate use, with square, beveled or moulded raise; a Jointer—making a glue, rolling-table and flooring joints; a Gainer—making a round, bevel groove or grain, from three-eighths to eight inches wide; a Rip or Cross-cut Saw—being a substantial saw-table, permitting the use of a rip or cross-cut saw of twelve inches diameter; a Boring Machine—having a sliding table of eighteen inches slide and fourteen inches drop; a Routing Table—where bed, table and fence posts can be routed and round-ended mortises made; a Radius Planer (known as Bumble-Bee)—where wagon felloes, hounds, cart and drag shafts, &c., can be planed. It will plane light or heavy stuff of any length, out of wind, and finish it at the same operation, with great perfection.



## The Universal Wood-Worker,

Fig. 2



### With Sticker Attachment to Plane Four Sides.

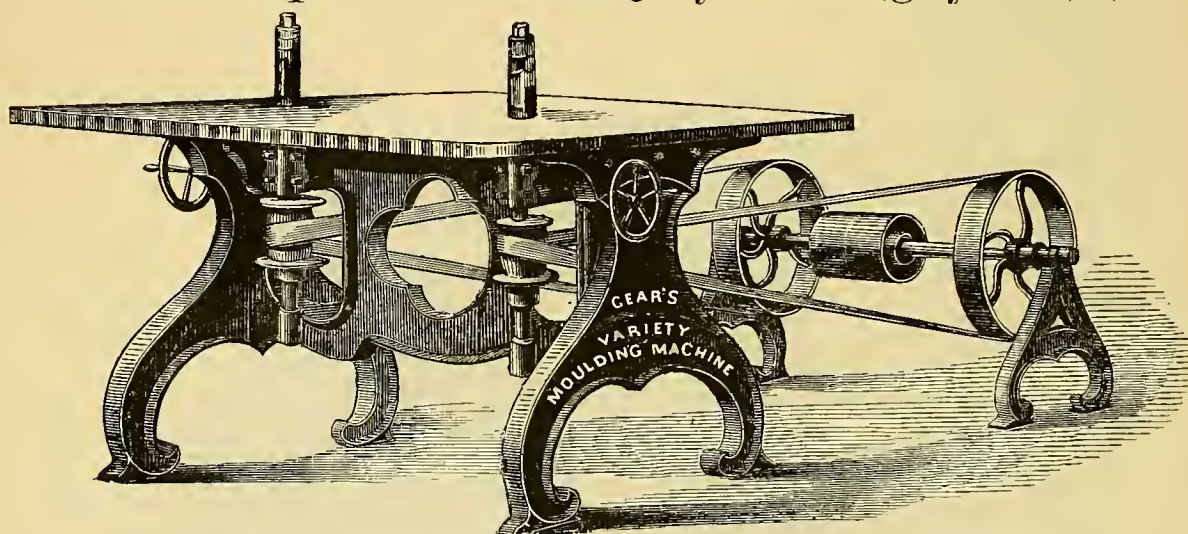
The above cut shows the reverse side of the machine represented on the preceding page. Besides the work before mentioned, it will corner, raise and flute the whole length, or between ends, and between the turned parts of bed, table, show-case piano and billiard-table legs, and will plane rough-split or hewed stuff, and tapered sticks, of either hard or soft wood, without "forms" or "wedging up." It is a ready and handy machine for odd jobs, and for planing ends and opening plinths, chaming posts and rails, jointing staves for columns and tanks; jointing several pieces of light stuff, such as casings and palings, at once, and many other things usually done at the bench, too numerous to mention. It saves much time and labor, as it can be easily adapted to the various kinds of work by simply changing, in almost a moment's time, the heads.

The machine is manufactured with different attachments, viz.: Universal Wood-worker, with Boring and Routing attachment; Universal Wood-worker, with Sticker attachments, to plane one, two, three or four sides. The machines with Sticker or Moulding attachments to plane *three* or *four* sides are made wholly of iron and steel, in the most substantial manner. The frame part of the other machines will be furnished either of part wood and iron, or wholly of iron, at the option of the purchaser.



# Gear's Illustrated Catalogue of

## Gear's Improved Variety Moulding Machine.



The Original and Only Simple and Perfect Machine Made.

Patented November 8, 1853; extended September 30, 1867. Also, patented April 30, 1867; February 2, July 13, and November 2, 1869, and February 1, 1870.

Twenty years' experience in experimenting and perfecting Nathaniel Gear's Combination Patent Variety Moulding Machine enables us to say that we are now prepared to furnish the manufacturing public with the best machine extant for moulding, planing and cutting straight and irregular forms. It is simple in its construction, practical and safe in its operations. The danger to operators of this class of machines has been entirely obviated by recent great improvements; and the new improvements made of late render this machine one of the wonders of the age. By the simple attachment of our improved Feed Table, represented on page 32, straight mouldings and planing are done upon it; also, circular mouldings; thus combining, in one machine, all the mechanic needs for doing his straight, waved, circular and irregular work, saving the cost of several machines to effect the purposes accomplished by this alone. It is, therefore, used profitably in the smallest establishments, as well as the largest. The operations of this machine do not stop at cutting the edges and sides of timber, but work equally well upon the ends, cutting them into any required form with the same facility that it does the sides.

It has now become one of the standard machines in the market, and any shop without it lacks one of the most useful and profitable tools now used or invented. Its application is at once so universal, its labor-saving capacity so great, and we are so assured by experience, that we can say to every man in the wood-working business, "the machine is one you need and must have, sooner or later."

It is not a machine unknown to the wood-working community. It has been in use twenty years all over the United States, and has taken years to complete it and bring it to its present degree of perfection; and so long as there is competition in business, so long will this machine be sought and used. There are many who are not supplied with this machine, who, if they had one, would save the wages of *from twenty to thirty first-class mechanics* the year round, besides much improving their style of work. The cost of manufacturing and the style of work are very important items, and if the cost can be reduced, and at the same time improve designs, such goods will lead the market and the manufacturers can live.

### Take Notice.

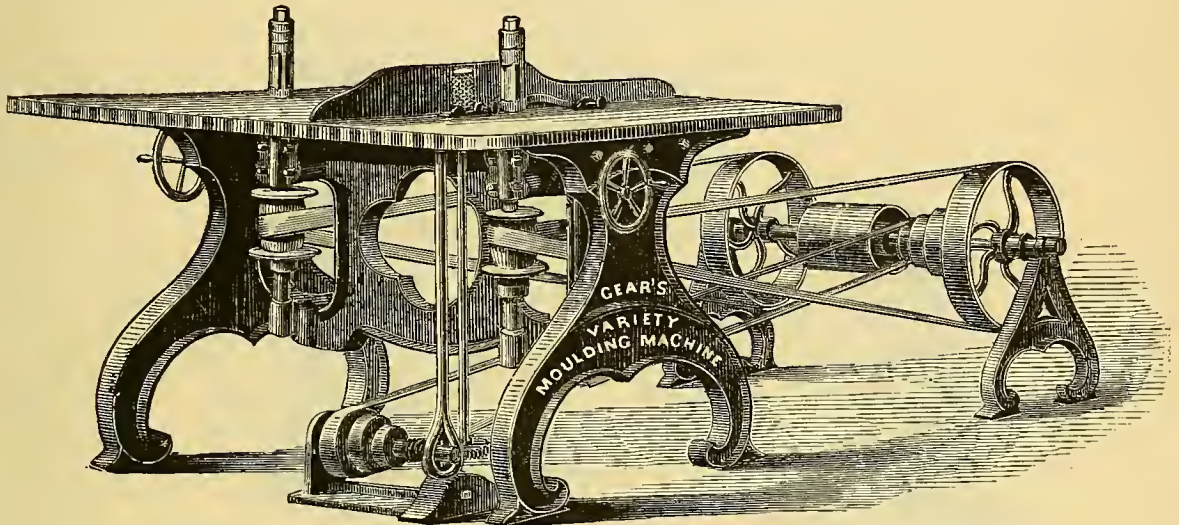
The suit in equity in the United States Circuit Court of Massachusetts, Alonzo S. Gear *et al.*, of Boston, *vs.* Jonathan P. Grosvenor *et. al.*, of Lowell, Mass., after a long and thorough investigation, has been decided in favor of myself, and a DECREE FOR A PERPETUAL INJUNCTION, establishing the validity and ownership of the patent, has been accordingly entered. The public are, therefore, cautioned against using infringements on the patents on this machine.

A. S. GEAR,  
Sole Owner and Manufacturer for the United States.



# Wood & Iron Working Machinery.

## Gear's Improved Variety Moulding Machine.



"C" Machine—For Planing and Moulding Irregular and Straight Forms in Wood.

Patented November 8, 1853; extended September 30, 1867. Also, patented April 30, 1867; February 2, July 13, and November 2, 1869, and February 1, 1870.

LETTER "A" MACHINE, WITH  $1\frac{3}{8}$  AND 2 INCH HEADS FOR IRREGULAR WORK, WITH COUNTER-SHAFT. This machine is intended for Sash, Door and Blind Shops, Cabinet Furniture Work, and the same work that is done on class "B." It weighs about 650 pounds, has an improved hoisting apparatus and patent steps. The Heads are 25 inches apart. The Table is of wood, made of fifty pieces glued together, and is 3 feet 10 inches in length by 3 feet 9 inches in width. The machine is all iron and steel, except the Table, and will plane up to 5 inches. The tight and loose Pulleys are  $7\frac{1}{2}$  inches in diameter, and  $4\frac{1}{2}$  inch face, and should make about 775 revolutions per minute. [See cut of machine on preceding page.]

LETTER "B" MACHINE, WITH  $1\frac{3}{8}$ ,  $2\frac{1}{4}$  AND  $3\frac{1}{2}$  INCH HEADS, FOR ALL KINDS OF IRREGULAR WORK, WITH COUNTER-SHAFT. This machine is made of iron and steel, except the Table, which is wood, made of fifty pieces glued together. Size, 4 feet 9 inches by 4 feet 2 inches. It is intended for every description of irregular moulding and planing. It weighs about 1,000 pounds and has an improved hoisting apparatus and patent steps. It is used in Furniture, Sash, Door and Blind Factories; Chair, Boat, Car, Carriage, Agricultural Implements, and Plough Manufactories; in a word, every kind of an establishment where a machine is desired to plane crooks and sweeps up to 6 inches. It is the best machine beyond doubt in the world for the work designed. The tight and loose Pulleys are 8 inches in diameter, 6 inch face, and should make about 800 turns per minute. [See cut of machine on preceding page.]

LETTER "C" MACHINE, WITH  $1\frac{3}{8}$ ,  $2\frac{1}{4}$  AND  $3\frac{1}{2}$  INCH HEADS, WITH FEED TABLE AND CONNECTIONS FOR ALL KINDS OF IRREGULAR AND STRAIGHT WORK, WITH COUNTER-SHAFT. This machine is just like the "B," only it has added to it our Feed Table and Attachment for all kinds of straight mouldings up to 5 inches, and can be attached to either the "A" or "B" machine. The tight and loose Pulleys are 8 inches in diameter, 6 inch face, and should make about 800 revolutions per minute. [See above cut.]

LETTER "D" MACHINE, WITH ONE HEAD (SMALL), WITH COUNTER-SHAFT. This machine is all iron, and similar in construction to our Hand-feed Dovetailing Machine. It has one Head, and is intended for moulding and planing small crooked work, so small that it is not practicable to change the material from one head to the other. It is used to great advantage to do such work where the other sizes of machines are also in use. It has our patent step, and improved hoisting apparatus. Weight, about 300 pounds. The tight and loose Pulleys are  $7\frac{1}{2}$  inches in diameter,  $4\frac{1}{2}$  inch face, and should make about 775 turns per minute.

OUR NEW DOVETAILING ATTACHMENT can be attached to either the "A," "B" or "C" machine. It makes both mortise and tenon at one operation. In ordering, send a piece of wood just like the shape of the end of the spindle used, and state the number of the machine, if our make.

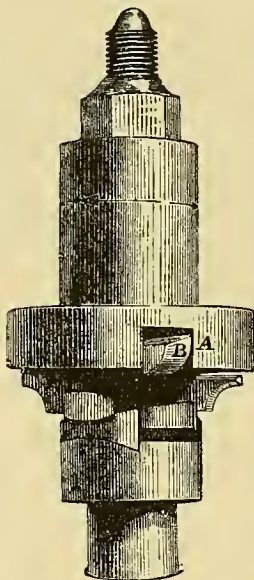
We also make Iron Tables for this machine at an additional cost, if preferred.



# Gear's Illustrated Catalogue of

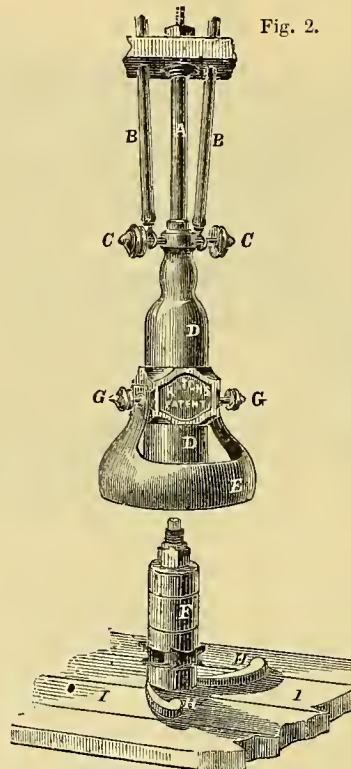
## Guards or Guides for Variety Moulding Machines.

Fig. 1.



Gear's (Jordan's Patent) Adjustable Guard or Guide.

Fig. 2.



Gear's (Hatch's Patent) Guard or Guide.

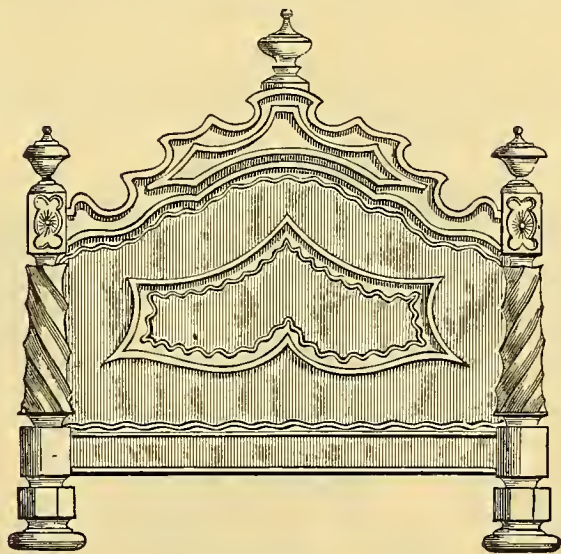
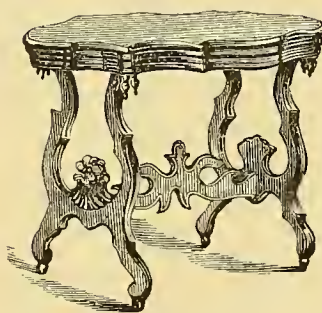
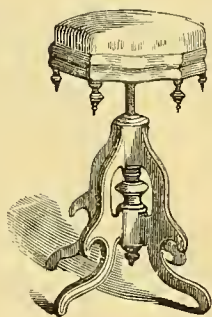
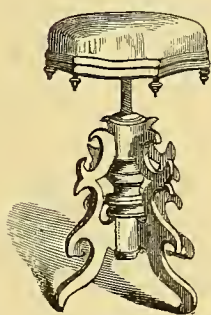
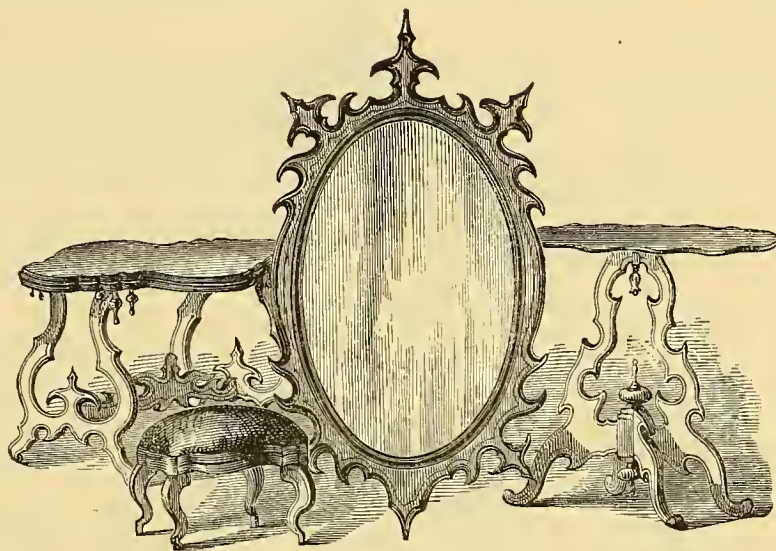
Figure 1 represents a view of the Combination Cutter Head, with Adjustable Intermediate Collars, which can be attached to all Irregular Variety Moulding, Planing and Shaping Machines now in use. "A" represents the Cutter Guard Block, which is held between two adjustable collars, and can be moved up or down at the operator's will, and need not be removed in placing or removing the cutters. "B" represents the Cutters projecting out through the Guard, gauging the shavings to any thickness desired, the only complete and practicable way of gauging the shaving the same as in the common planes.

Figure 2 represents a Guard or Guide for use on the Variety Moulding Machine, invented by a practical mechanic. It is a perfect shield to the hands of the operator, and can be attached to any Upright Moulding Machine. I I represents a section of the Table, through which the Cutter Head, F, is seen projecting. H H are guides, the large ends of which are placed in holes in the Table, the other ends resting against the rotary guide collar. The pattern on which the material is fastened to be moulded and shaped, is first put against the guide, H—gradually starting in, cutting the material away upon it—until it rests against the rotating guide. The rod, A, is fastened to a beam, suspended from the floor above, and over the cutter-heads, on which the socket, D D, slides. It is brought down on and over the cutter-heads by loosening the thumb screws, C C, and fastened on the rod again at any point desired. B B are rubber pipes which may be stretched to any distance desired. The hood, E, is fastened to the socket, D D, at G G, and when the socket is pulled down over the head, F, the hood is brought down over the cutters, leaving room enough only underneath it for the thickness of the pattern and material upon it. Therefore, if any undue action of the cutters on the material being planed should draw the hands of the operator to the head, they would be protected by the hood from being injured. The hood can be moved backward and forward on the socket at G G—adjusting it to any length of cutters used, and can be moved around to front any point on the head. They are open on top, so that the operator can see the cutters. The shavings all pass off at the rear of the hood, which is left open for that purpose. By loosening the thumb screws, C C, the elasticity of the rubber pipe, B B, instantly carries up out of the way the hood, E, and socket, D D, leaving the head all clear to change the cutters.



# Wood and Iron Working Machinery.

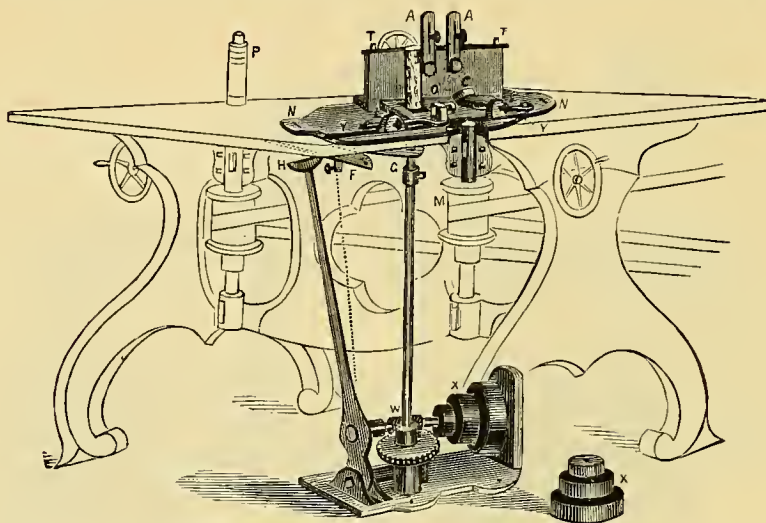
Work Done on Gear's Variety Moulding Machine.





# Gear's Illustrated Catalogue of

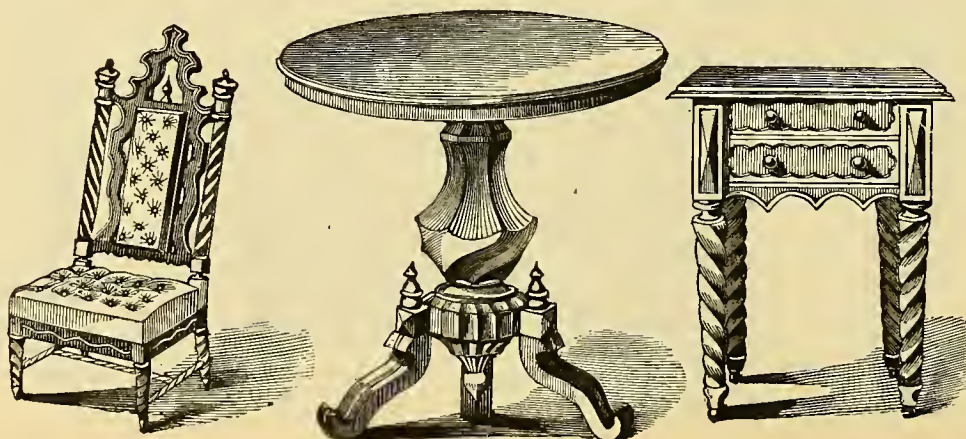
## Feed Table Attachment



### For Gear's Patent Variety Moulding Machine.

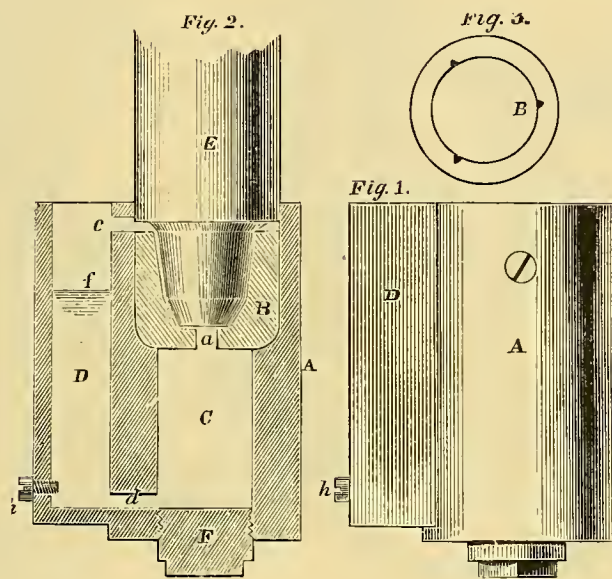
The above cut represents an attachment for making Straight Mouldings on our Variety Machine. By referring to the cut will be seen the Table or Bed-piece, N N, which is secured to the table of the machine with two strong screws, tightened by a hand-nut. O O is a sliding rest, which can be moved back and forth. Y Y are springs attached to a sliding rest, which can be adjusted to any thickness of stock up to five inches, and is moved by a small hand-wheel, half of which is shown in the cut behind the rest. A A are guides attached to springs, T T, for keeping the work down on the table, N N. They are adjustable up and down, held in place by thumb-screws, and have rolls in the lower end, which make the work run through without friction. Y Y are two slides planed into the table, N N, V-shaped, to which are attached springs, O and C. The spring O presses on the work between the Cutter Head and the feed-roll; spring C holds the work after it has passed the cutter. These two springs (O and C) are adjusted by two screws in slides T T, so as to give any pressure desired on the work. X X are two cone pulleys. One of them goes on the counter-shaft, and is belted direct to the attachment which gives power to the feed-shaft, G. W is a worm that works in the gear on the shaft G. H is a lever held in place by the spring F, and moves back and forth, as shown by a dotted line, and throws the worm, W, in and out of the gear on the shaft G, to enable the workman to stop and start the feed at pleasure. M is the cutter-shaft with a head the same as shaft P.

### Work Done on Gear's Variety Moulding Machine.





## Dunklee's Self-Oiling Step for Vertical Spindles.



Upright spindles, rotating rapidly, have always been very difficult to make, and the cause of more annoyance to persons using them than almost any other piece of mechanism in use. Many methods have been adopted to keep them properly oiled to prevent them from heating; and no one has been more sorely tried than ourselves to get a self-oiling step for the spindles to our Variety Moulding Machine. We used every thing proposed, but found nothing that was a complete success until we tried the invention above illustrated. The illustration itself is sufficient, at a glance, to show how simple a method can accomplish an object which years of thought have but recently culminated into a fixed fact.

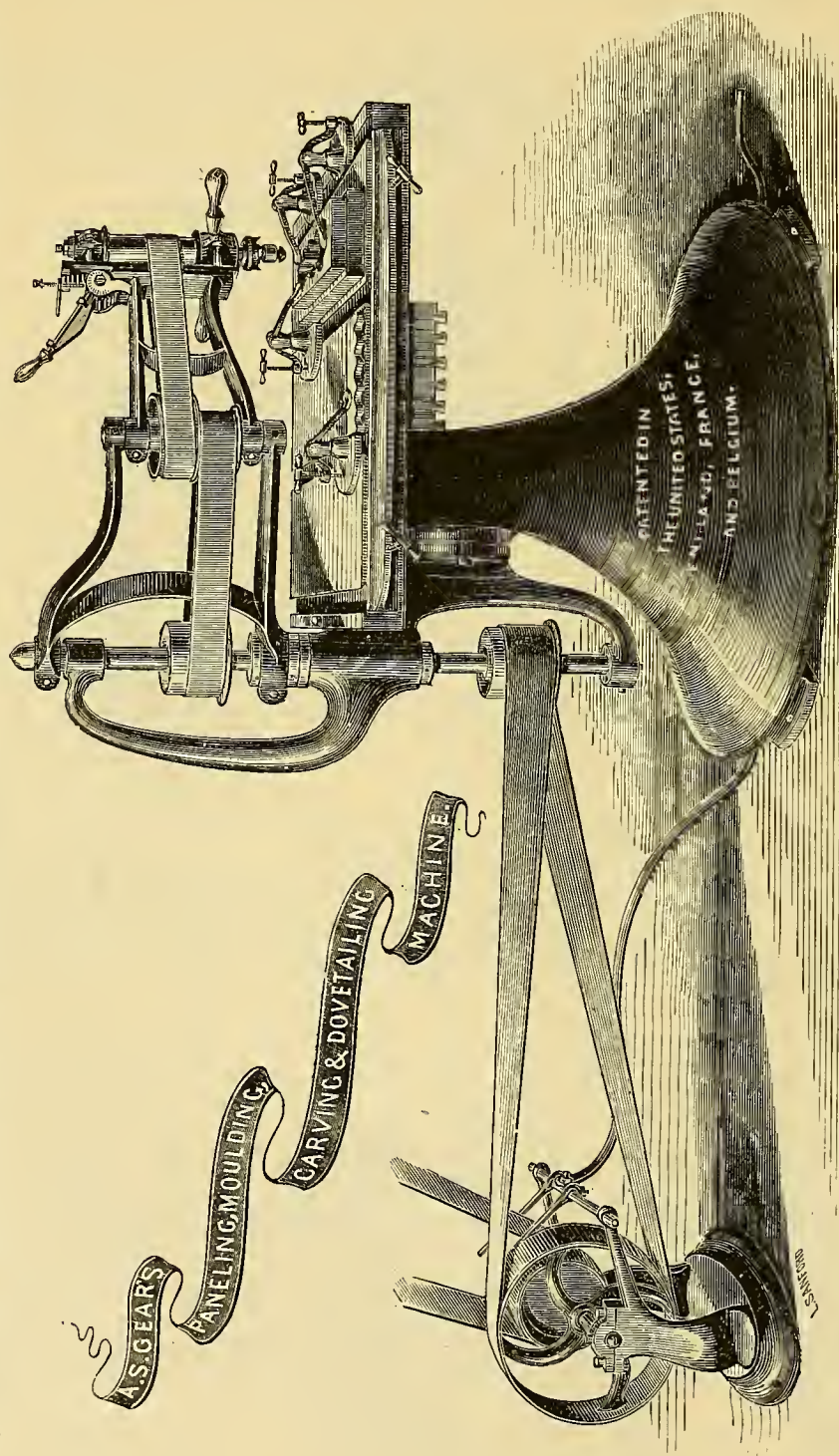
The following description fully explains this Step, WHICH IS NOW ATTACHED TO ALL OUR VARIETY MOULDING MACHINES, AND TO EVERY UPRIGHT SPINDLE IN ANY WAY USED ABOUT OUR MACHINERY, WHICH ALONE PLACES ITS VALUE FAR ABOVE ANY IN USE. Figure 1 is a side view. Figure 2 a vertical central section. A is a socket arranged to receive and hold the step, B, so as to form a chamber, C, beneath the step, and an opening, *a*, is formed through the step into the chamber, C, beneath. Upon the side of the socket, A, is arranged a vertical chamber, D, extending up above the top of the step and communicating with the chamber, C, through an opening, *d*, and also with the step over its top through an opening, *e*. E is a spindle resting in the step. The lubricating material is poured into the chamber, D, until it is filled to the line, *f*. The spindle rapidly revolving creates a centrifugal force within the step, which draws the oil through the opening, *a*, from the chamber beneath, and causes it to move up and flow over the top of the step, through an opening, *e*, back into the chamber, D. One or more slight vertical grooves in the step, as seen in Figure 3, insures a free passage through the step. By removing the plug, F, and the screw or plug, *h*, any sediment which may have found its way into the chambers is easily removed.

A. S. GEAR is the sole owner of the above Patent Step, and all persons are cautioned not to infringe upon the patent.



# Gear's Illustrated Catalogue of

## A. S. Gear's New Patent Paneling, Moulding, Dovetailing, Carving and Boring Machine.



Patented November 2, 1869; November 23, 1869; December 15, 1869; December 24, 1869; February 1, 1870; May 31, 1870; June 7, 1870, and August 23, 1870. Also, patented in England, France and Belgium.



# Wood and Iron Working Machinery.

## Gear's New Machine For Paneling, Moulding, Dovetailing, &c.

[SEE ILLUSTRATION ON PAGE 34.]

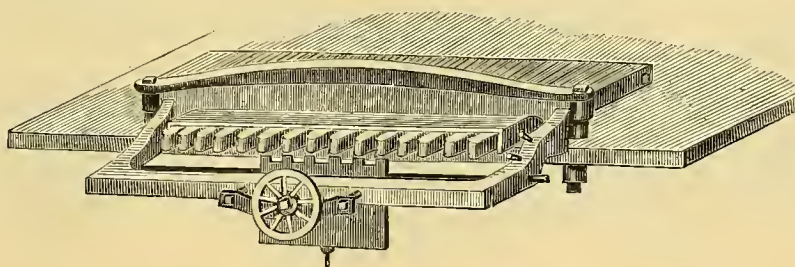
GEAR'S VARIETY MOULDING MACHINE, with which all manner of crooks and sweeps have been planed and moulded on the edges of lumber—completely revolutionizing the manufacture and style of furniture, house-carpentry finish, car building, carriage manufacturing, etc.,—now fills the most important place in almost every establishment working wood by machinery. Twenty years have passed since its invention and introduction, and twenty year's experience in its manufacture have suggested many new ideas that we believed could be practically applied to wood-working machinery, and which have at last culminated in producing the wonderful PANELING, MOULDING, CARVING AND DOVETAILING MACHINE, with which a panel of any desired form is made, and any irregular or straight pattern desired is planed, moulded or carved upon the edge or face of lumber.

The face of drawer fronts, head and foot boards, center table legs, what-nots, sofa backs, fronts and ends, bureau tops, looking glass and picture frames, secretaries, sewing machine cases, musical instrument cases, brackets, monograms, block letters, persons' names, door panels, office desks, car and steamboat finish, and in fact every kind of finish hertofore made upon the edges of lumber which was formerly required to be mitred and glued upon the face to produce a finish, is now planed, beaded and moulded upon the solid piece itself, thereby obviating the thousands of glue-joints, which, by shrinkage or other causes, render almost worthless a large proportion of our best finished work.

It is also a mortising, tenoning and boring machine; will carve images, scrolls, vines, piano legs—anything, almost, that can be desired in the ornamentation of wood. By the use of emery wheels we take out of wind iron castings and surface iron plates with great rapidity. The machine is easily operated. The operator can move the head up and down and fasten it at any point without moving his hands from the handles, and a very large proportion of work desired can be accomplished without using either a guide or pattern—simply using a drawing of what you desire to carve or mould. The inventor has cut and moulded his own signature upon the face of lumber, without the aid of a guide or pattern, with nearly the same ease that it could be done with a pen. The machine also dovetails, and unlike any other before produced, cuts rapidly both pieces at once—the mortise and tenon—at the same operation, making the strongest dovetail possible.

This machine does a kind of work that has heretofore required the most skillful mechanics to perform. There is hardly any branch of wood-working where it cannot be profitably used. It is capable of doing the work that THIRTY FIRST-CLASS MECHANICS could perform by hand. It is simple in construction, not liable to get out of order, perfect and exact in its operations, and is in every way the most valuable and wonderful wood-working machine of the age. Several large furniture establishments and railroad shops have it in use. Among other commendatory notices received is the following from George W. Perry, Master Mechanic of the Philadelphia, Wilmington and Baltimore Railroad Company, Wilmington, Del.: "This company has one of your Paneling, Dovetailing, Carving and Boring Machines, and it is with pleasure that I inform you that it gives complete satisfaction, performing the work in No. 1 order and with great dispatch."

### The New Dovetailing Attachment to Gear's Paneling Machine.

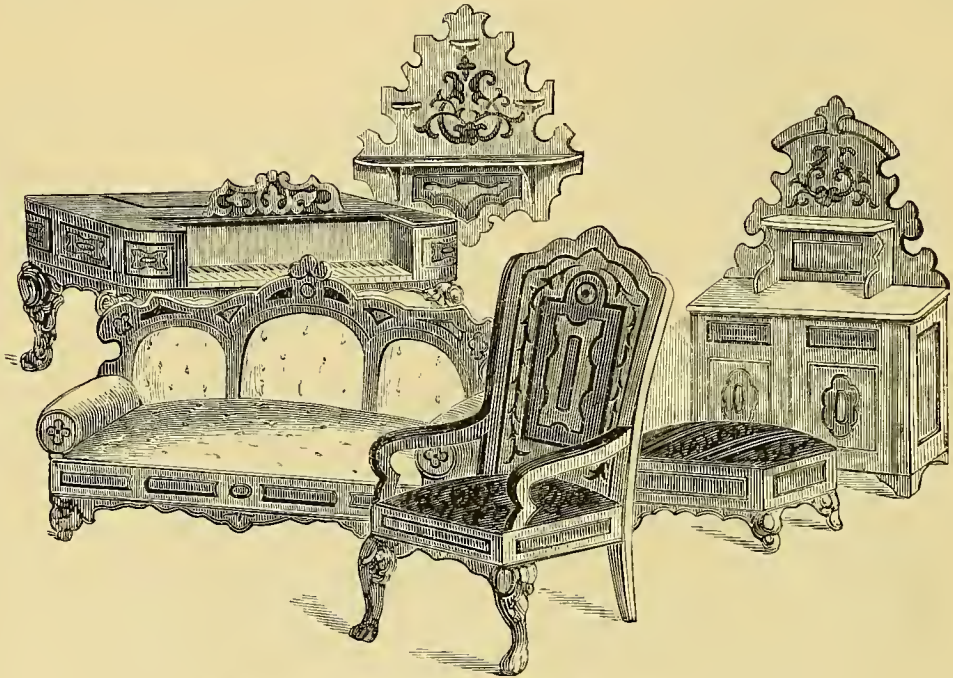


It makes both tenon and mortise at one operation.

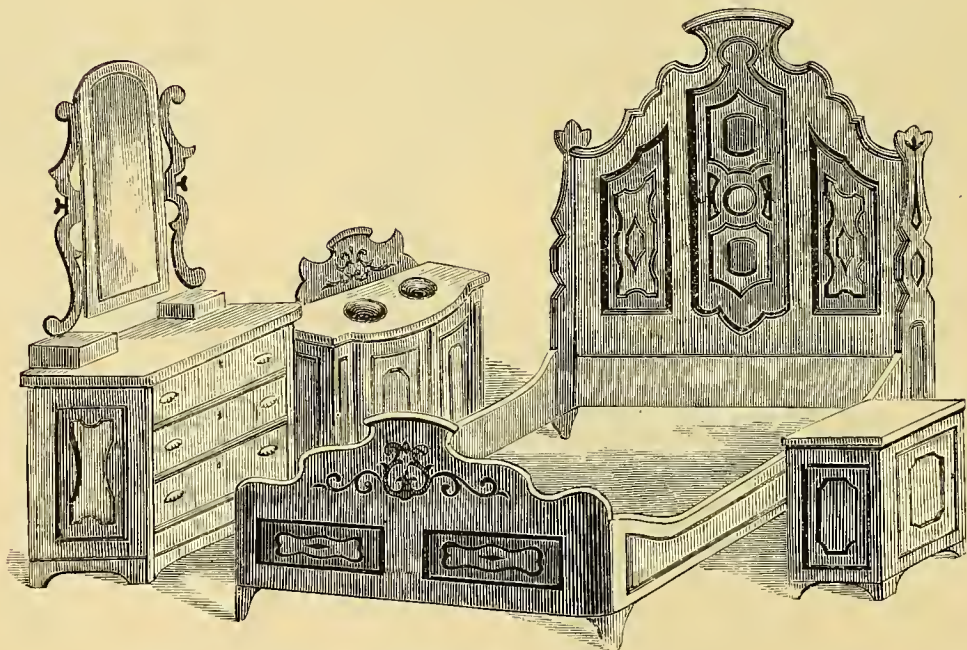


# Gear's Illustrated Catalogue of

Work Done on Gear's Paneling Machine.



Piano and Parlor Set of Furniture.

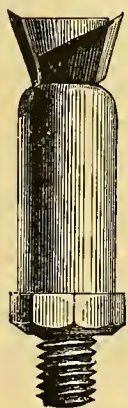
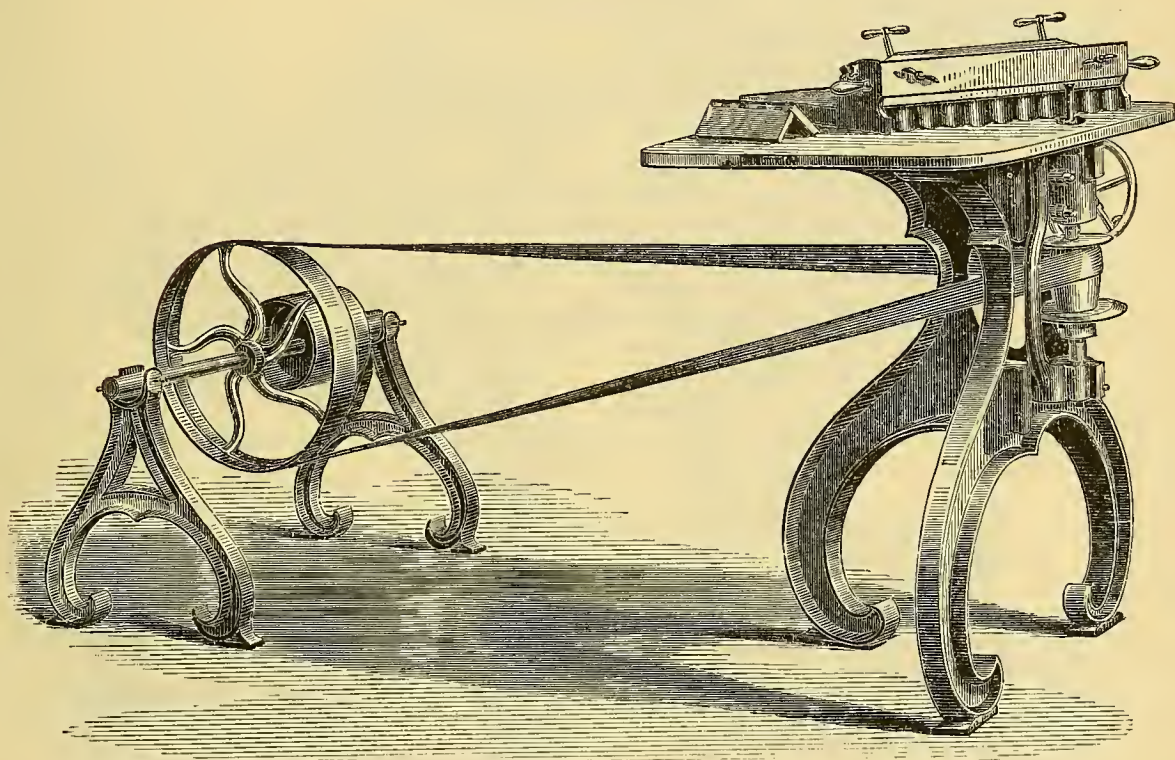


Set of Chamber Furniture.



# Wood and Iron Working Machinery.

## Gear's Patent Dovetailing Machine.



CUTTER-HEAD.

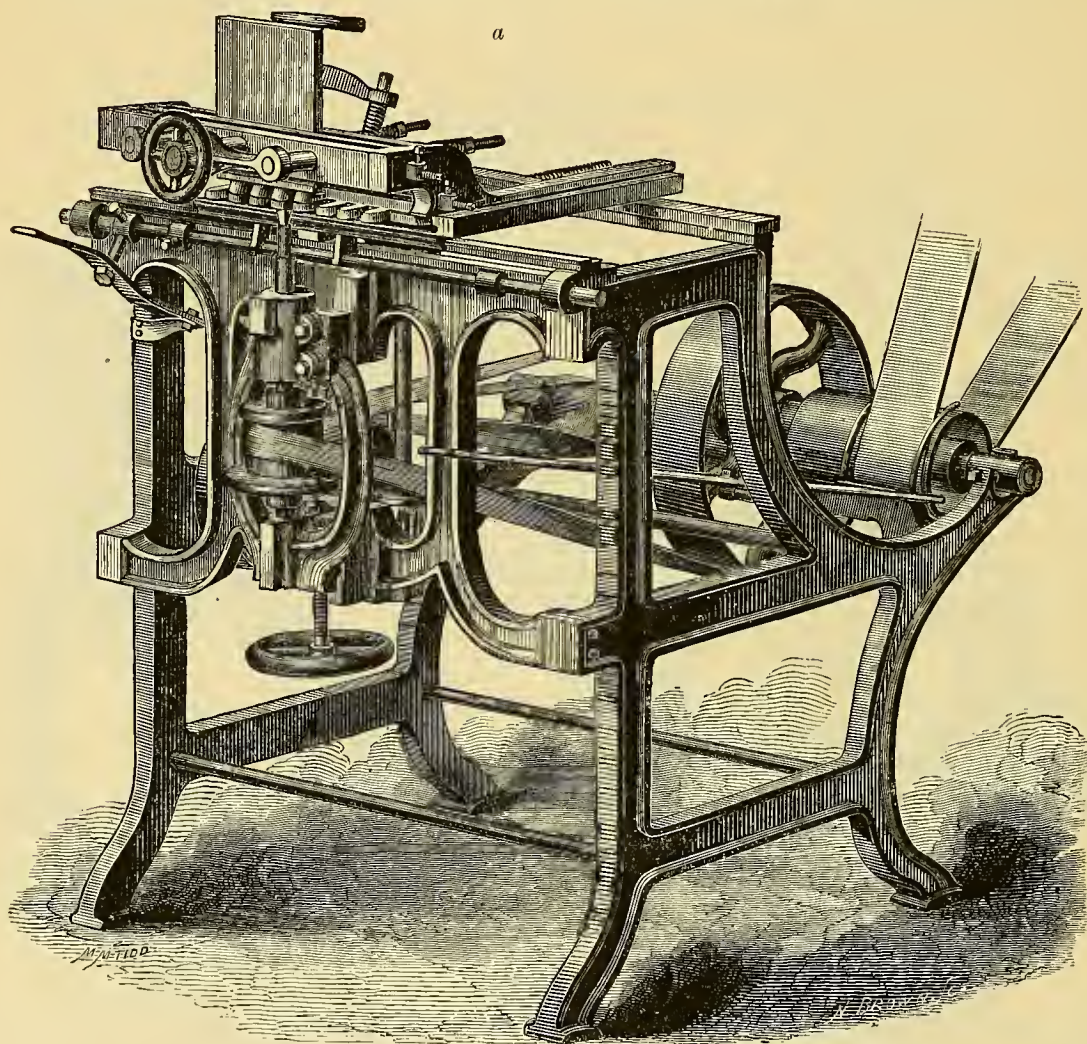
This machine makes both mortise and tenon at the same time. The same tool that cuts the mortise also cuts the tenon. The work is held in place the same as in our Automatic Dovetailing Machine. The template holding the work is moved around the cutter by hand. The table being of iron, and finished smooth and true, makes it work easy. One man can work from fifty to sixty common drawers per hour on this machine. The two pieces of work to be dovetailed are fastened together in a simple manner. It will do perfect work, and will cut more rapidly than any other machine known. The Cutter Head, and manner of holding the Cutters, is exceedingly simple. The knives are of good width—are adjustable, and can be moved forward as they wear away, and their strength is not impaired with slots and holes. It makes the old style shape dovetail; also, a style peculiar to itself, which is thought to be the best produced.

It has besides an attachment for the Variety or Upright Moulding Machines. In ordering the attachment, please give the name of the maker of the machine, the exact diameter of the spindle or arbor used, and the length from top of table to bottom of step, and the exact shape of that part of the spindle which fits the step. If to be used on our Variety Machine, state the class and number of the machine.

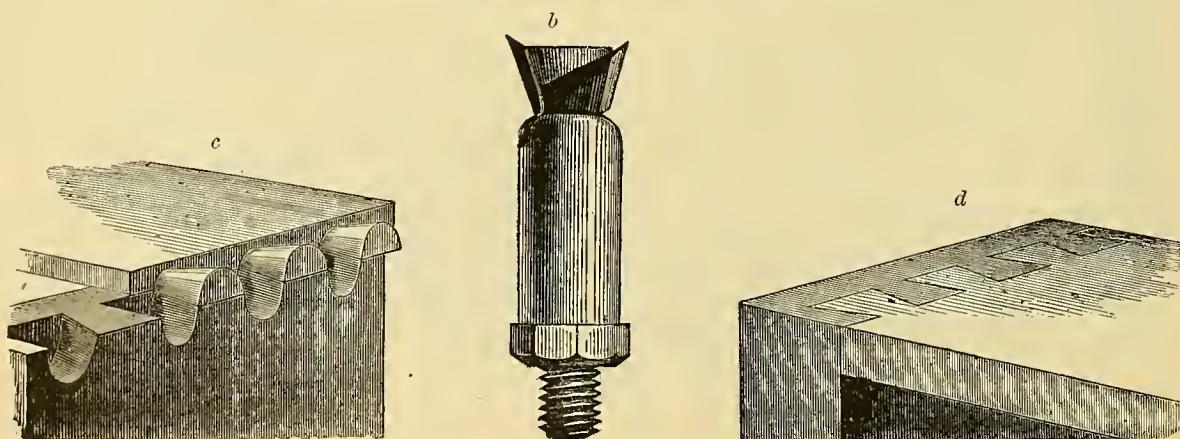


# Wood and Iron Working Machinery.

## Gear's Automatic Dovetailing Machine.



Patented April 2, 1872.



For description, see next page.



# Gear's Illustrated Catalogue of

## Gear's Automatic Dovetailing Machine.

Making the Tenon and Mortise at One Operation.

By reference to the cut on page 38 (*a*), will be seen a vertical spindle, in which is seen also the Dovetail Head (*b*), so arranged as to be hoisted up or down in order to adjust the same to any height. On the frame back of it are two Sliding Tables, which are simultaneously moved by a simple mechanism, feeding the pieces to be dovetailed (which are held on one of them) by the cutter head, forming one into a tenon, and the other into a mortise, simultaneously. The other parts of the machine need no further description than to say that the belts from the large pulley on the counter-shaft give power to the shaft containing the cutter head, and the pulleys seen underneath the machine are driven by a belt from the counter-shaft, which gives motion to the sliding tables and feeds the work being cut back and forth past the revolving cutter-head. The reference, *c*, shows the manner in which the pieces come together while being cut, and the reference, *d*, shows the appearance when put together.

This simple, complete, automatic and reliable invention is now offered to the manufacturers of this country. Besides doing its work in a better manner, it does it more rapidly, and any boy can operate it, there being nothing about it to get out of order.

The country is flooded with a large number of machines, called Dovetailing Machines, that do not make a dovetail. Machines that make a joint by boring a hole in one piece and forming a pin on the other, we call *Doweling Machines*. Such pieces are doweled, and not dovetailed together. It is true, some of these pins are formed leaving a shoulder, but the durability of the pieces so joined together is in the strength of the pin only. This machine makes a *dovetail*, the tenons of which bear on every part of the mortise, and the dovetail formed by it is dovetailing two ways, the tenon being cut at the same time that the mortise is, always making a perfect fit. Wood put together by this machine is more firm than by any other heretofore known, and is nearly as cheaply done as it can be nailed. So perfect and reliable is this machine that the manufacturers of it freely offer and earnestly urge all in want of a Dovetailing Machine, to favor them with their address and signify their desire to try it, and one will be sent for trial, which may be returned if not satisfactory.

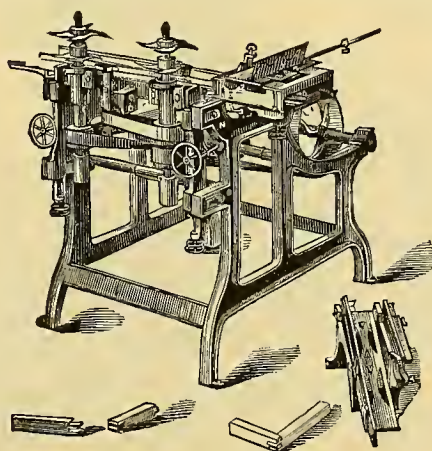
Do not longer work with a machine that only aids in accomplishing a desired purpose, and the work of which, at the most, is but doweling pieces of wood together; and do not keep machines in use that require too much time in adjusting them, but purchase at once one that is automatic in all its workings, every part of which is simplicity itself. The manner of holding the cutters in the cutter head used (see letter *b*), the short length of time required to take them out, sharpen and replace, alone makes it profitable to discard the old style machines and fill their places with this economical invention. Altogether, we say truthfully, as a little time will demonstrate, this machine you cannot dispense with, if you would reduce your pay-roll and the cost of making dovetailed work.

The tight and loose pulleys on the counter-shaft are 7 inches in diameter, 4 inch face, and should run about 800 revolutions per minute. We will send one on trial to all who are in want of a *Dovetailing Machine*.

Do not confound Gear's Automatic Dovetailing Machine with Gear's Paneling and Dovetailing Machine, which is altogether a different article.

## Patent Sash Dovetailing Machine.

The accompanying cut is a representation of the machine as designed for the especial purpose of forming the dovetail joints universally used on the stiles and meeting rails of sashes. It combines all the elements of simplicity, occupies but little space, and only requires the power of an ordinary saw. The machine is so arranged that but a few minutes is required to adjust it, so as to cut with positive accuracy the various sizes and forms of dovetails or straight tenons ever used on sashes and

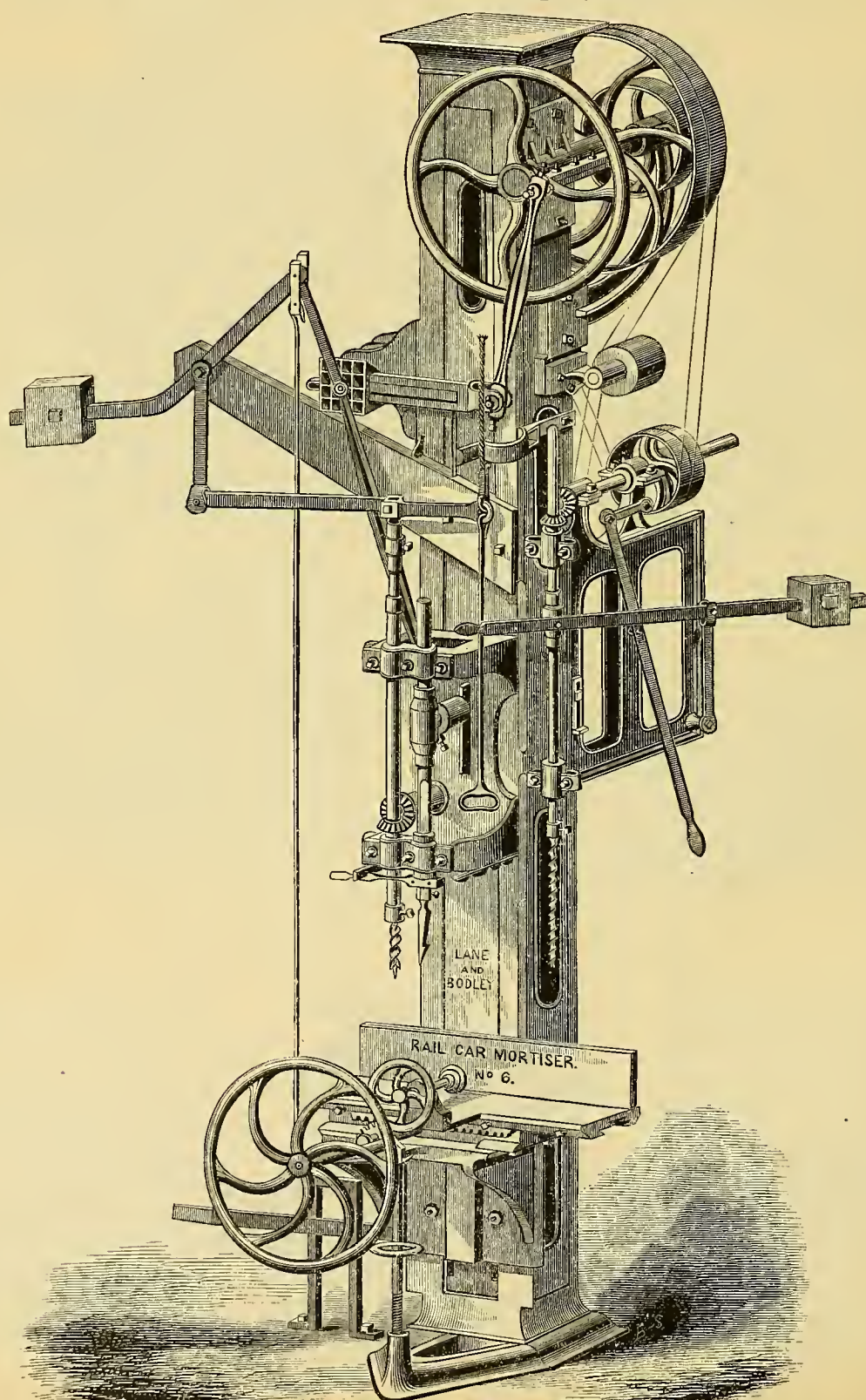


blinds. After once adjusted to the desired form, the operation is so simple that the most inexperienced person can work it. All that is required is to place the stuff (as shown in the cut) on the table, and then push it forward until it has passed the second saw or cutter, and the work is done, making a more perfect joint than can be made by hand, with a saving of much time in the handling of the stuff, as each joint (male and female) is produced at a single operation.



# Gear's Illustrated Catalogue of

## Large Car Mortising Machine.





# Wood and Iron Working Machinery.

## Large Car Mortising Machine,

With Auxiliary Boring Apparatus for Car Work.

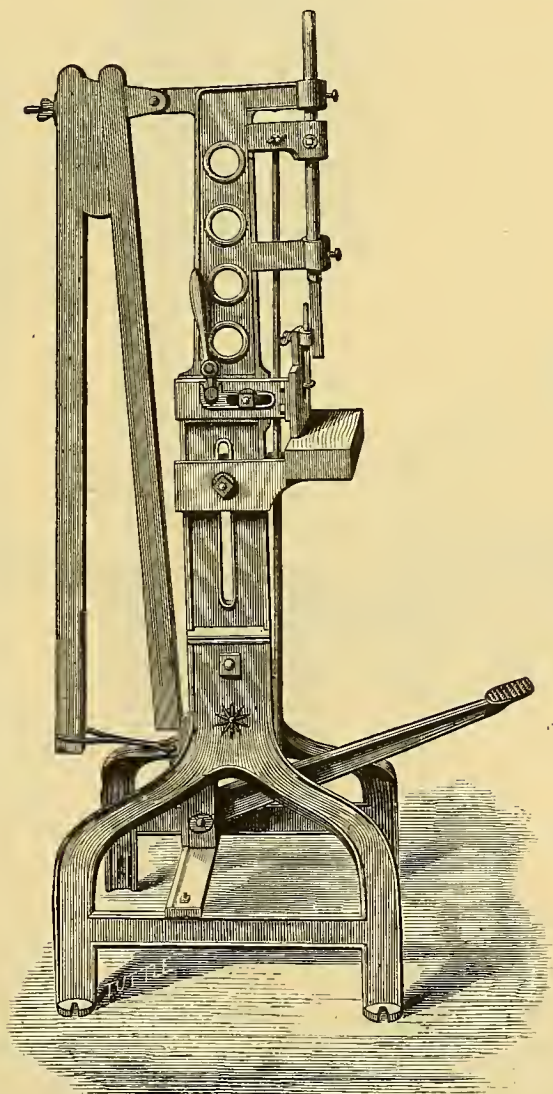
[FOR ILLUSTRATION SEE PAGE 40.]

This machine is of the heaviest and most substantial description. It is built upon a column of cast iron, the mandrels carrying the auger and the chisel-stand seven inches from the face thereof. The carriage will receive timber sixteen inches wide and has a suitable vertical adjustment. Chisels of any needed width may be used; a three inch mortise in hard oak produces no concussion to the foot of the operator, and no injury to the machine. The stroke is four inches, but may be increased to seven inches or less without extra cost, if so stated in the order.

The Auxiliary Boring Apparatus, by means of levers easily handled, has a horizontal adjustment of sixteen inches and a vertical motion of the same amount, using augers of that length; with it all holes needed for bolts or other purposes may be bored whilst the timber is in hand for mortising.

Augers and chisels  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1,  $1\frac{1}{4}$ ,  $1\frac{3}{8}$ ,  $1\frac{1}{2}$  inch; Augers for Auxiliary Boring Apparatus, 16 inch twist,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{7}{8}$  inch. Tight and loose pulleys 12 inches in diameter,  $4\frac{1}{2}$  inch face. Speed, 225 per minute.

## Foot Mortising Machine.

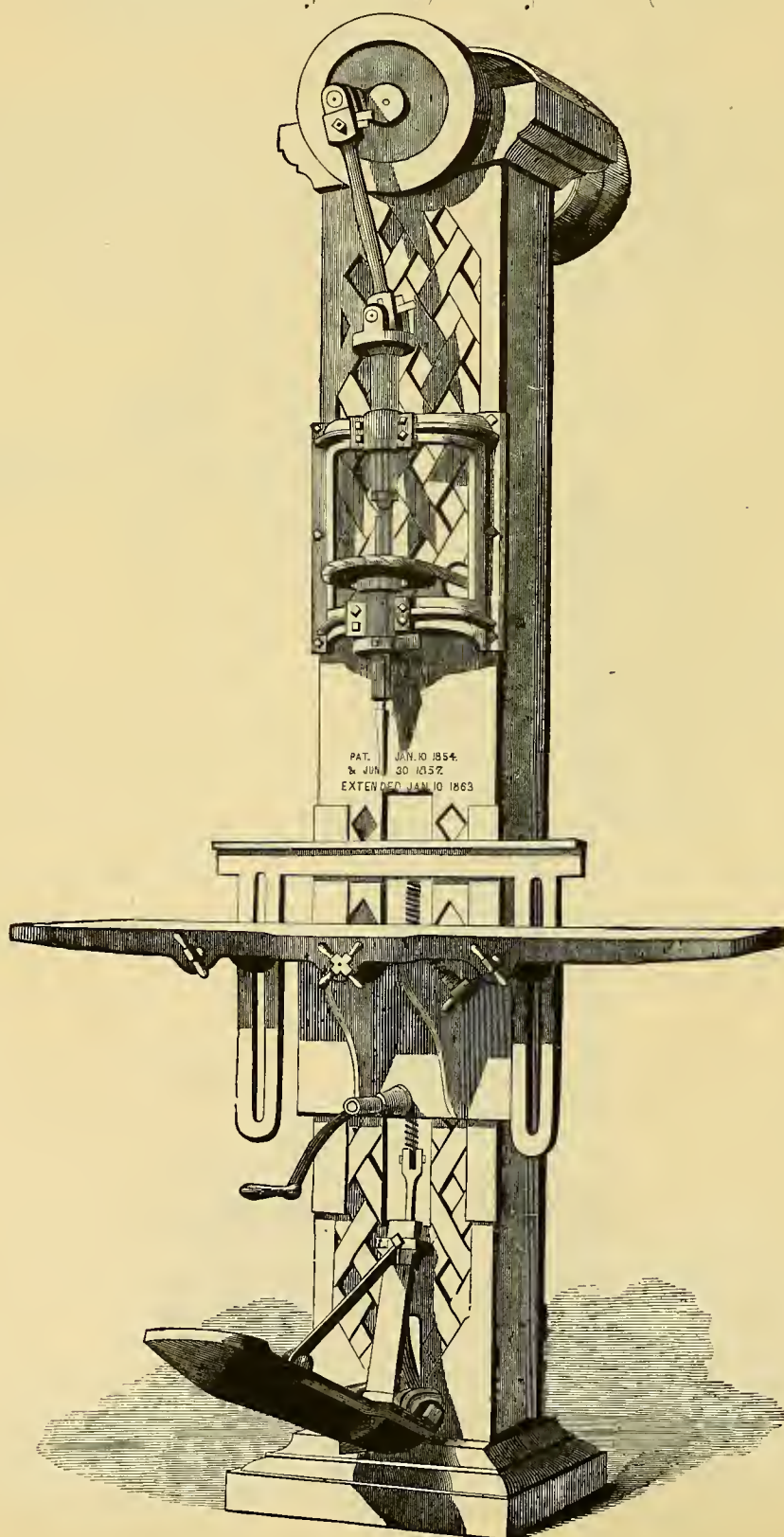


This machine is adapted to the manufacture of doors, sash, blinds, and all light work. Parties not having power will find it a convenient and labor-saving machine for all kinds of job work. It is made of iron and steel, excepting the spring, which is made of the best of seasoned hard wood. The chisel is reversible.



# Gear's Illustrated Catalogue of

## Power Mortiser No. 2.





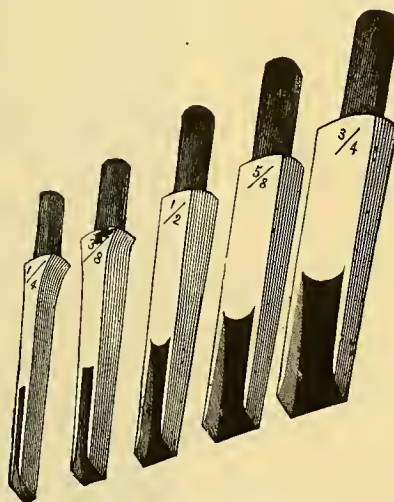
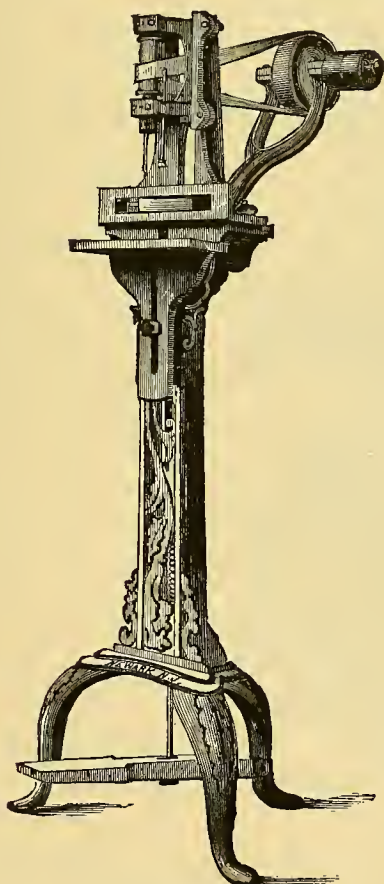
# Wood and Iron Working Machinery.

## Power Mortiser No. 2.

[SEE ILLUSTRATION ON PAGE 42.]

This is a compact and strong machine, being built entirely of iron and steel. It takes up but little room, and is simple and durable, giving perfect satisfaction wherever used. It runs without noise, and there is no jar on the foot. The chisel is reversed by power applied by friction, and the device for accomplishing it is very simple, and operates instantaneously, the chisel always taking care of itself, with no loss of time to the operator, and with no possibility of breaking the machine. It can be run any desired speed with perfect safety. The size represented by the engraving on the preceding page is No. 2, and is intended principally for the use of door manufacturers. It is capable of mortising any size of stile or rail ever required, and is also sufficiently heavy, strong and suitable for mortising hard wood, such as bedsteads, etc. It weighs about 850 pounds, and should be run about 400 strokes per minute.

There is another size,—the No. 3,—intended for mortising sash and blind stiles, or any light work, and, therefore, taking the place of all foot machines, doing the work nicer and at least three times as fast, with much less labor to the operator. It weighs about 350 pounds, and should run about 500 strokes per minute.



Chisels for Power Mortiser, No. 2.

## Blind Stile Spacing and Boring Machine.

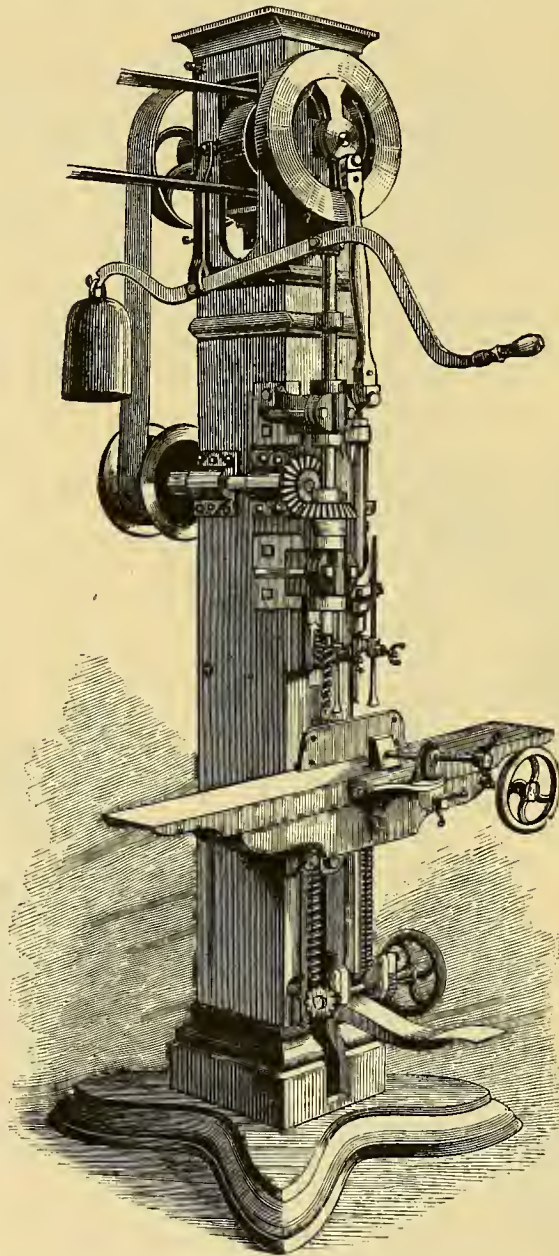
SELF-SPACING AND SELF-FEEDING.

By the use of the above machine the labor of laying out the holes is entirely dispensed with, being provided with a pawl and ratchet, and so arranged that the same ratchet (or notched stick) used in the Blind Wiring Machine can also be used in boring the stiles, thereby producing a perfect interchange and making it an indispensable companion to the Blind Wirer.



# Gear's Illustrated Catalogue of

## Medium Power Mortising Machine,



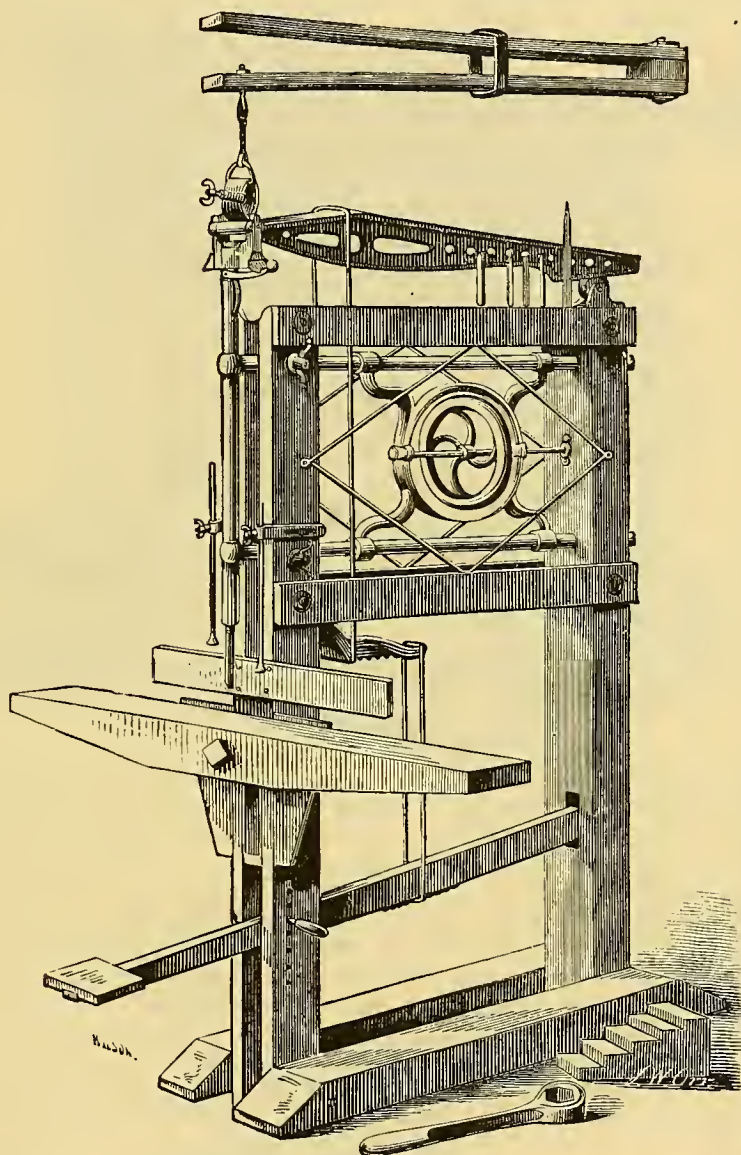
With Boring Apparatus.

This machine is especially adapted for ordinary work in hard wood and the heavier classes of building work, &c. The chisel has a rapid perpendicular motion, and is brought down to the work by the treadle, and carried up by the balance-weight on the back end of treadle. It is self-reversing, turning the chisel when the treadle is let up, at each end of the mortise. The bed can be set at any angle required. The machine has the Boring Apparatus, which is set on the same line with the chisel, so that the work can be bored and then run under the chisel and mortised without unclamping it from the bed. The bit-shaft is run by a belt from the chisel-shaft, and so arranged that when the chisel is working, the bit stops, and as the chisel is let up by the treadle, the bit starts, ready for boring. We furnish with each machine, five chisels and five bits to match, viz.:  $\frac{1}{4}$ ,  $\frac{3}{8}$ , 7-16,  $\frac{1}{2}$ ,  $\frac{5}{8}$  inch. The driving pulley is 10 inches in diameter, 3 inch face, and should make 300 revolutions per minute. The machine may be driven from a main line if it is level with the pulley in top of machine. If not, a counter will be needed, to set on a level with the pulley, and eight or ten feet distant. Weight of machine, not boxed, 1,450 pounds. Power required to drive mortiser, 1 horse-power. Belting required: 25 to 30 feet  $2\frac{1}{4}$  inch belt, as the distance of counter belt may require.



# Wood and Iron Working Machinery.

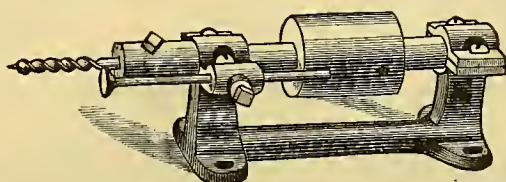
## Large Foot Mortising Machine.



This machine needs no special recommendation or description, as it has been long and favorably known throughout the United States and foreign countries. It is one of the best Foot Mortisers ever put into the market. The cut represents the machine set up ready for use.

## Small Boring Shaft.

This is a convenient little machine for any kind of light work, as it can be set on a bench, or in any convenient place, and takes up but very little room. It has a shaft, with boxes and pulley, and can be used for bor-

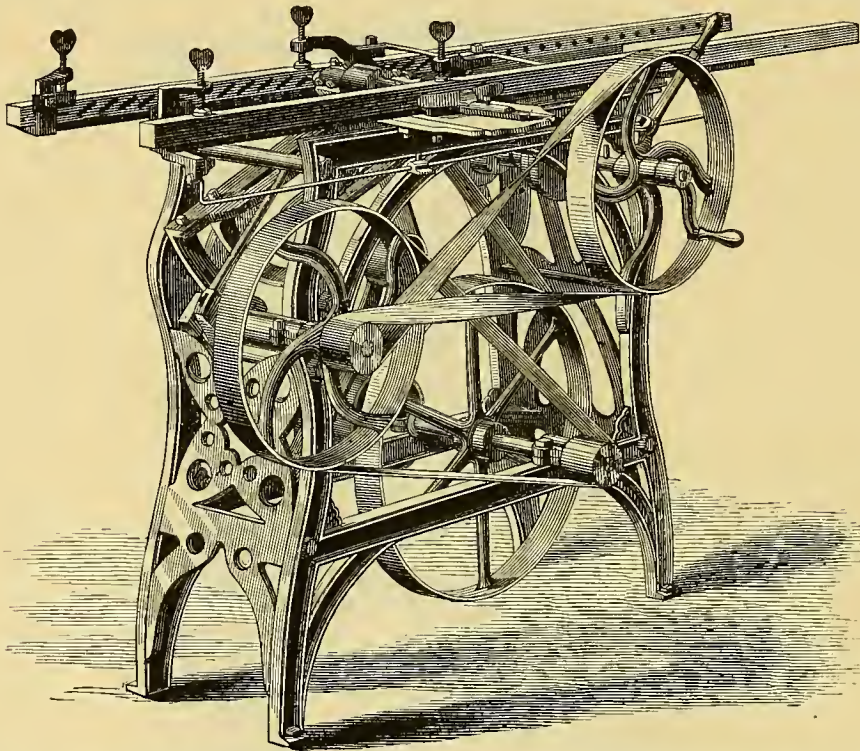


ing blind stiles, or any small holes. It is not suitable for any bit larger than  $\frac{3}{8}$  inch. The pulley on the shaft is  $2\frac{1}{2}$  inches in diameter, 3 inch face, and should make 1,000 revolutions per minute. The driving belt should be 2 inches in width.



# Deer's Illustrated Catalogue of

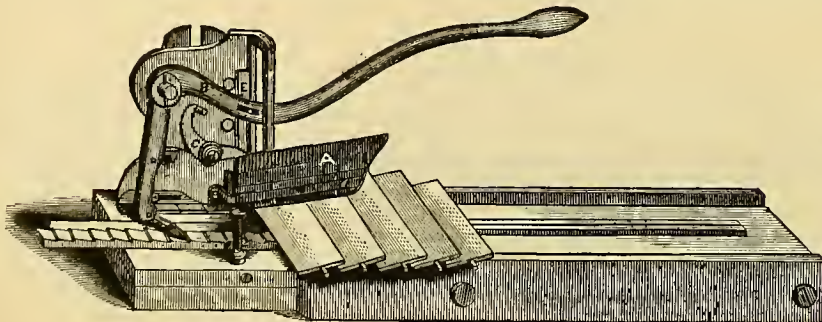
## Blind Stile Boring and Mortising Machine.



This machine is for making the mortise for stationary shades, and boring holes for rolling shades in the stiles for window blinds. It is entirely automatic in its operations, and either bores the round hole for the reception of the pivot of turning slats, or mortises the recesses for the reception of the end of those slats designed to be permanently fixed at a certain angle. The latter are made, on this machine, by means similar to those used in boring a simple round hole, the tool being a reciprocating or traversing burr, or bit, which can be used on hard wood, knotty pine, and other obstinate descriptions of wood, where ordinary machine chisels fail.

This machine will make mortises of any length, from a round hole up to  $2\frac{1}{2}$  inches, and of any width, depth and angle desired in a window blind, leaving the mortise free from chips, ready for the slat, and is self-operating in all its parts. All the workman has to do is to put in the stiles and set the machine in motion, when it does its work, and having done it, stops. It does the work on both sides at once, at the rate of sixty mortises per minute. The bit or burr that does the work is a very simple and cheap affair, not liable to be broken, and costs but ten cents. This machine is wholly of iron and steel, thoroughly built, easily set up and put in operation, and not liable to get out of order. Tight and loose pulleys  $7\frac{1}{2}$  inches in diameter,  $2\frac{1}{2}$  inch face, and should make 650 revolutions per minute.

## Patent Blind Wiring Machine, for Pivot Blinds.

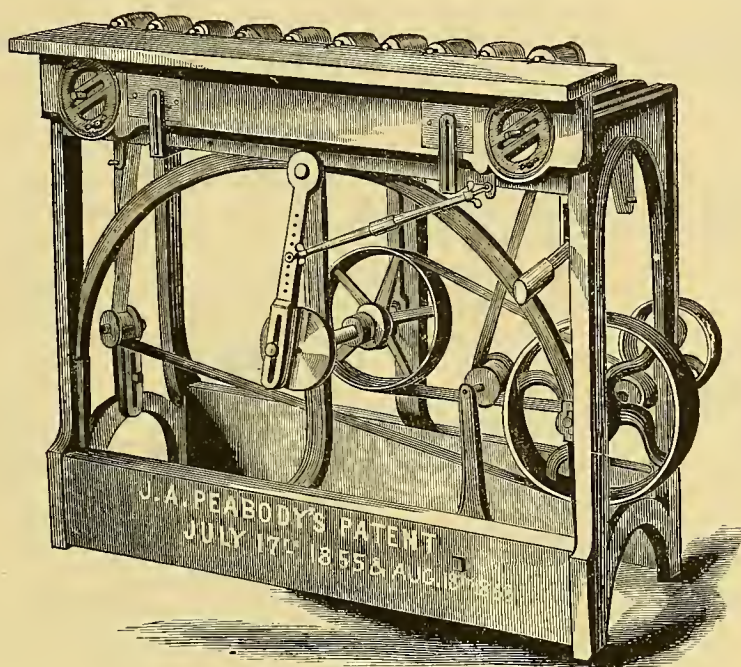


This machine drives the wires or staples into *either* or *both* the slats and rods, without the necessity of marking or pricking either, and drives the wire accurately in the centre, or at any angle, as may be required, in each lath or slat. It spaces the rod and drives the wires any given distance apart, and, if desired, attaches the two together.



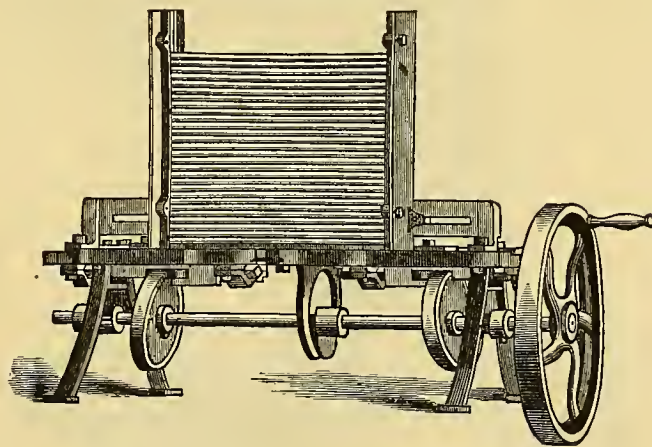
# Wood and Iron Working Machinery.

## Improved Blind Stile Mortising Machine.



This machine, for boring and mortising window blinds, the manufacturer claims, excels all other machines for the same purpose. It accomplishes its work with exceeding dispatch, and leaves a perfect mortise free from chips and ready for use. A mortise can be made from  $\frac{1}{4}$  of an inch to  $2\frac{1}{4}$  inches in length, and  $\frac{3}{4}$  of an inch in depth.

## Blind Slat Crimping Machine.

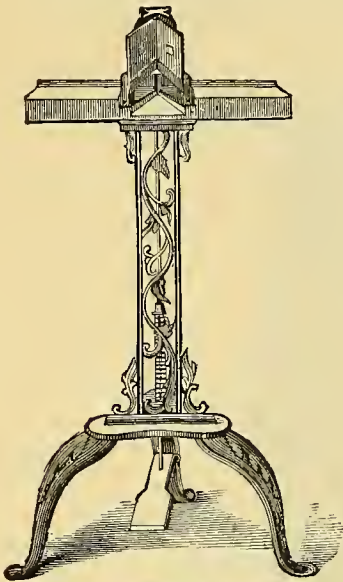


This machine is used for compressing the ends of stationary blind slats so as to fit and fill the mortise. It may be operated by hand or power. The slats are placed in a hopper, or receiver, at the top of the machine, and the rotary motion given to the balance wheel operates the dies by a combination of cams, and this motion will drop a slat, carry it to the dies, compress both ends, and throw it off. Any size dies may be ordered with the machine, and any length slat can be worked. The speed may be from 30 to 100 revolutions per minute, as desired.



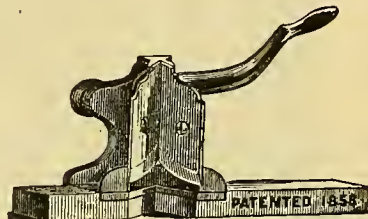
# Gear's Illustrated Catalogue of

## Patent Foot and Hand Mitering Machines.



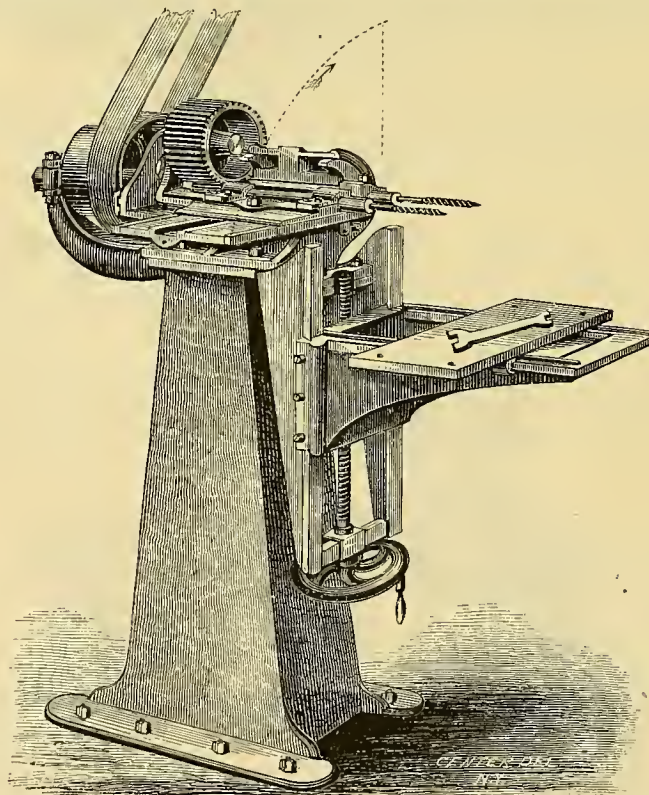
Foot Mitering Machine.

These machines are intended for cutting or mitering mouldings into doors, panel work, picture frames, and a great variety of other work of a like character. They have a cast iron frame, with two knives, set at right angles, so arranged that by one motion of the lever the moulding is cut in two and both angles of the miter made. The knives are set so as to cut an ACCURATE MITER, and are of such shape as to make a DRAWING CUT, leaving the work as smooth as when cut with a plane or chisel, thus making a perfect joint. Both the foot and the hand machines are constructed on the same principles and are intended for the same purposes. The foot machine has a light iron treadle to operate it.



Hand Mitering Machine.

## Improved Adjustable Double Spindle Boring Machine.

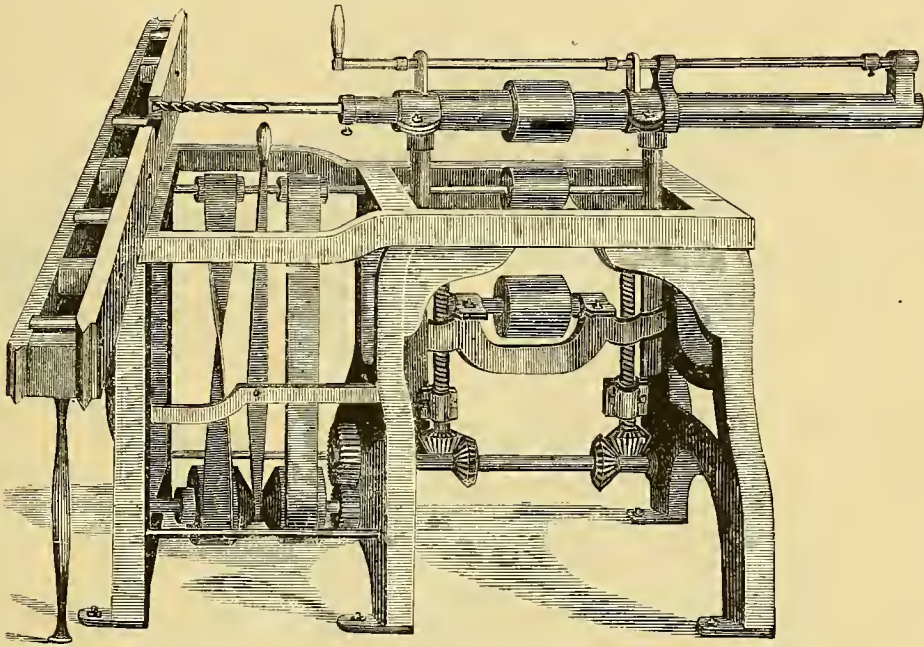


This Boring Machine is made entirely of iron, with two spindles, which can be adjusted towards and from each other. When close together they are one inch from centre to centre, and they can be set apart to six inches. A compound table, which slides in and out, and also up and down, serves to support the work. It is strong and firm, and is run at a speed of 900 to 1,200 revolutions per minute. It is used to great advantage for boring two holes at a time, and also by chair, lounge and table manufacturers for producing slots and mortises.



# Wood and Iron Working Machinery.

## Hoit's Patent Horizontal Car Boring Machine.



The many advantages of this machine over all others for the purpose it is intended, is worthy the attention of users. For accuracy and ease of working, capacity and speed, it is not excelled. It will do more than double the amount of work that any other machine now in use can do in the same time, for the reason that the machine is self-regulating by means of a small lever that the workman can move without changing his position at the machine. The boring bar can be moved up or down to any required point instantly, instead of raising and lowering the table, as by other machines, and that by hand. The workman has nothing to do but put the timber on the table and shift it to different points, and the machine does the work.

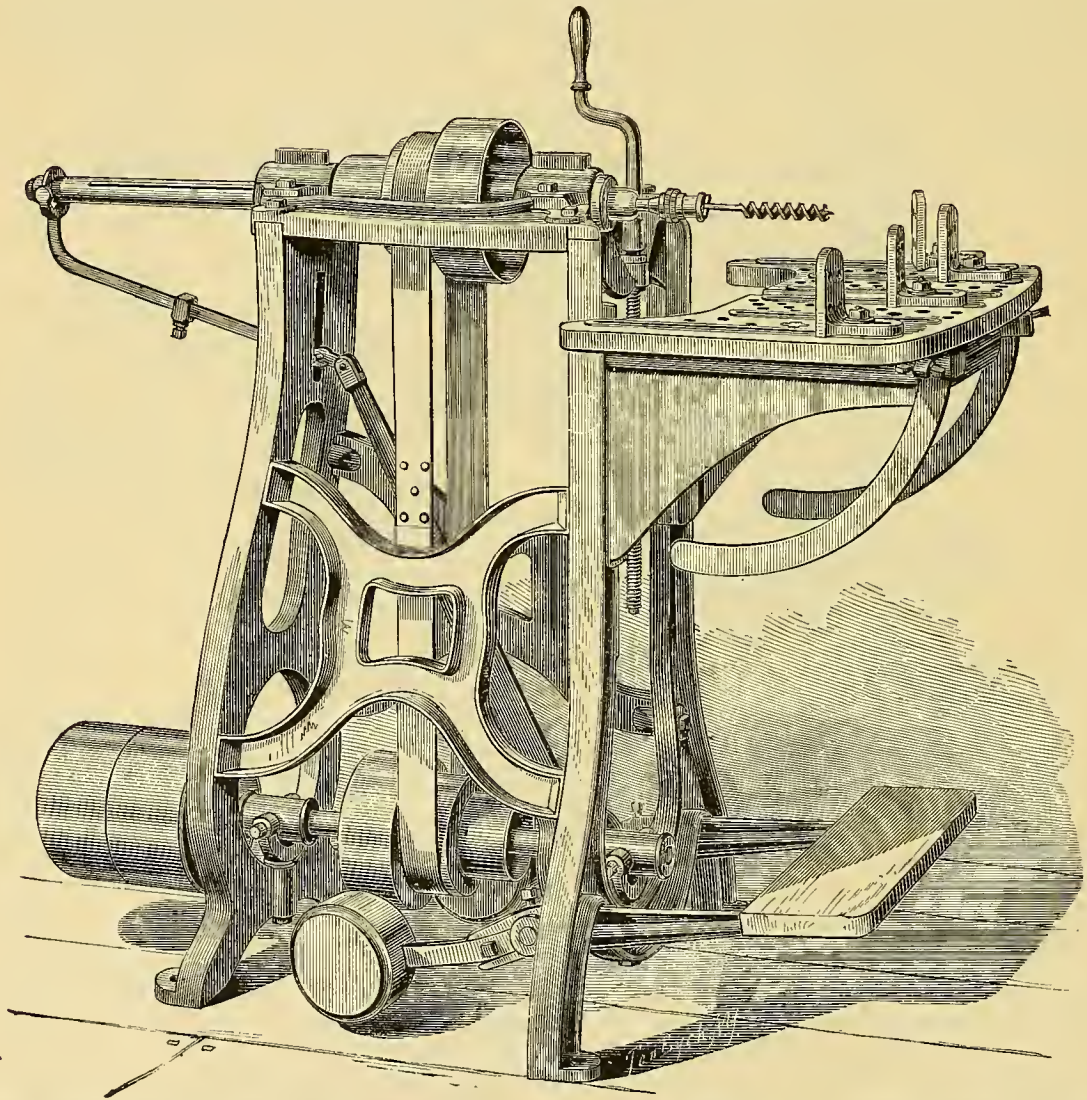
Another great advantage over other machines is in *end* boring, such as for joint-bolts and for truss-rods in car frames, or any angular boring. The timber can be placed in any required position, and will remain stationary until finished. The machine is so arranged that any desired length of auger can be used, from twenty-two inches down to the shortest size. The accuracy of the machine will be at once seen, for the table or bed is made stationary, and is perfectly parallel with the boring bar, consequently it must always bore correctly. It is also arranged so that the auger is held close to the timber, so that it can be seen exactly when the boring bar is set at its proper height. The boring bar is moved up and down by means of a friction clutch; consequently, as soon as the pressure is let off the lever, the motion stops; and it is also so arranged that it is self-supporting and will not move up or down unless the lever is applied.

This machine is adapted to all kinds of work, but more particularly to railroad car building, and agricultural works. It is well and substantially made, and not liable to get out of order, and is simple and easy to manage. It is made of iron and steel, except the table, which is hard wood, eight feet long and eleven inches wide, with five iron rolls to move the work on. The bit will raise nine inches above the table. The tight and loose pulleys on the counter shaft are ten inches in diameter, four inch face, and should make 350 revolutions for a one-inch bit. Floor space required for the frame of the machine, four by three feet.

A. S. GEAR is the sole manufacturer and agent of this machine.



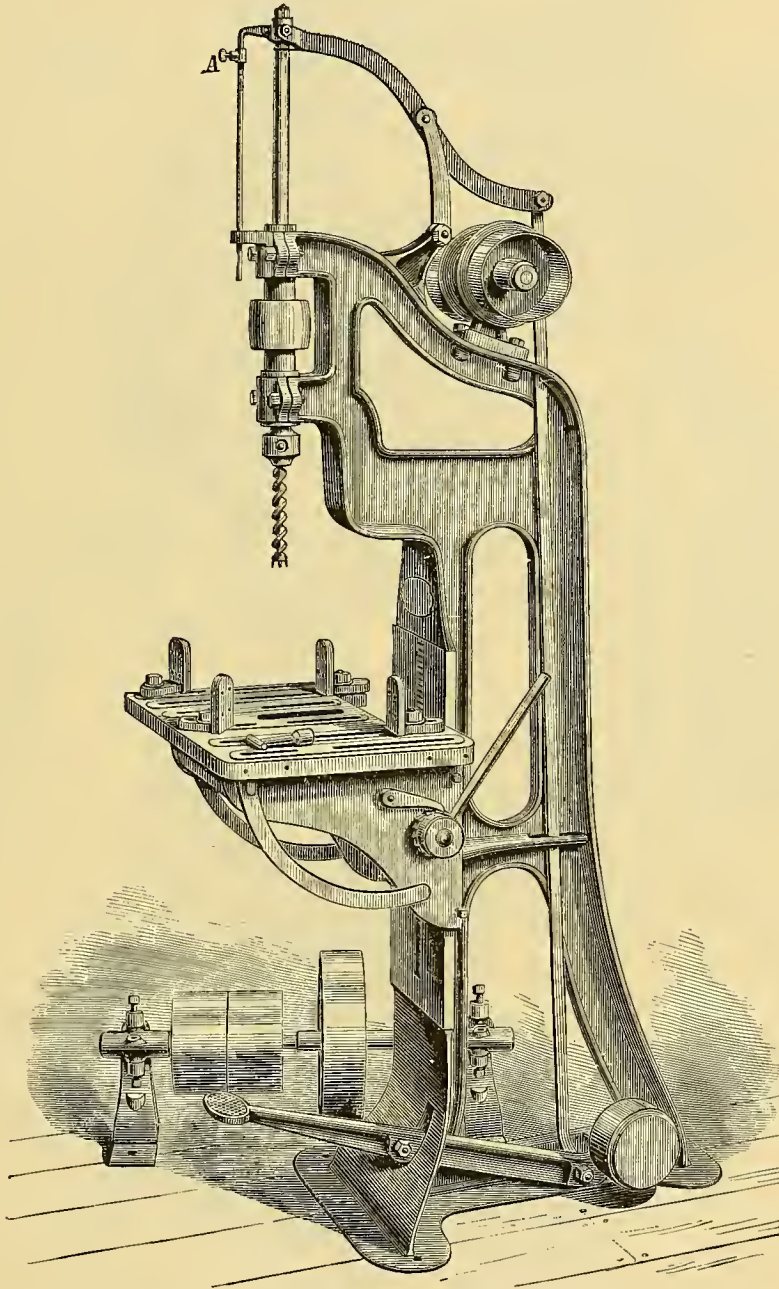
## Universal Boring Machine.



The prominent feature in the construction of this machine is its capability to bore a hole at any angle or direction desired. Any sized bit required is inserted into the chuck, which is adjustable to fit large and small shanks. The mandrel which carries the chuck is made to traverse by a foot lever, so as to bore any depth up to twelve inches. The mandrel is driven by a belt from a cone pulley of three faces, giving the proper speeds for different sized bits. Slots and stops upon the table enable the work to be set at any desired angle on the horizontal plane, while the table can be set on an incline to any angle not exceeding forty-five degrees. The table is twenty-one inches wide, with fifteen inches slide, and it can be raised or lowered fifteen inches, enabling one to bore in the centre of thirty inches. The counter-shaft rests in self-adjusting boxes, and has a tight and loose pulley eight inches in diameter. The traversing mandrel is of the best quality of steel, and the machine is otherwise made of iron in a substantial manner. The several adjustments enable the operator to do all kinds of light and heavy boring with ease and great rapidity. An adjustable chuck, for holding various sizes of rod-bits and augers, accompanies each machine. The counter-shaft should make 900 revolutions per minute.



## Upright Boring Machine.

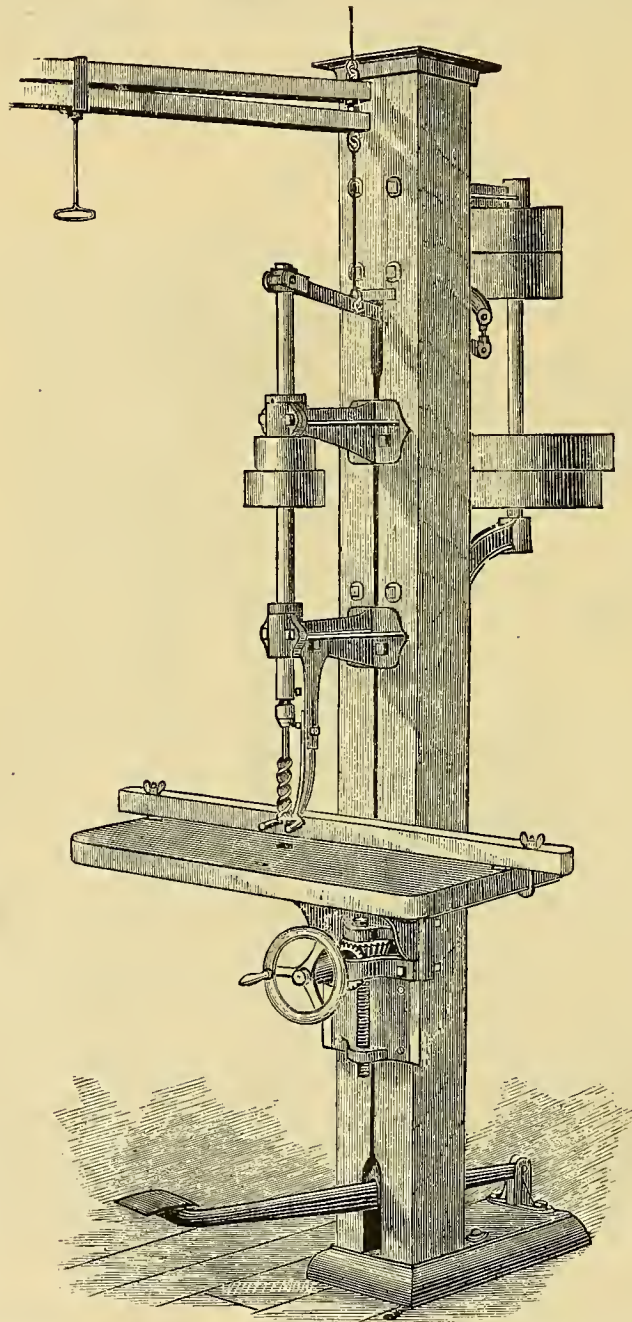


The accompanying cut represents an improved upright boring machine of a new pattern and design. The steel mandrel is  $1\frac{1}{4}$  inches in diameter, is traversable, and can be made to bore 10 or 14 inches deep as may be ordered. A commodious treadle connects with the mandrel and brings it down to the required depth, which can be changed and accurately adjusted. The bit returns by means of a weight operating on the bottom of the machine and is entirely out of the way. The table is gibbed to the machine and slides up and down 22 inches, with rack and pinion. It is made with an adjustable table for boring at any angle required.



# Gear's Illustrated Catalogue of

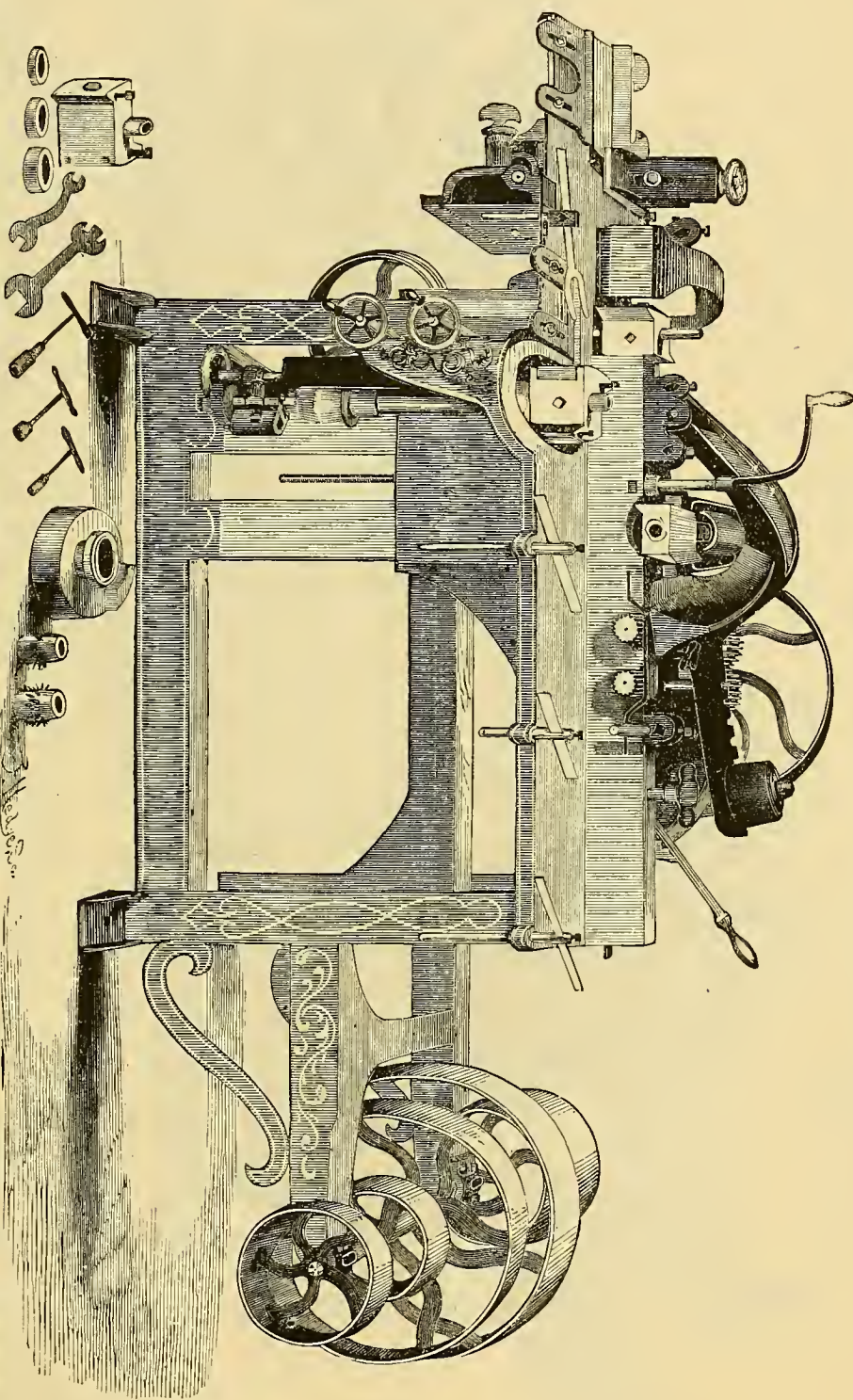
## Improved Upright Boring Machine.



This is a valuable machine for all wood-working establishments. It is suitable for light and heavy boring. The accompanying cut gives a correct representation of the machine in all its details. The table is  $3\frac{1}{2}$  feet long, 15 inches wide, and is raised and lowered by a hand-wheel and screw. It has two speeds, which is quite important in shifting from light to heavy work. It has a rest on the table to guide the stuff, readily adjusted by thumb-screws. It has, also, an adjustable pressure fork, for holding down the lumber while being bored. The tension of the spring is regulated by a hand-screw, as shown in the cut. The machine is held in position by an iron cap. It is provided with a socket for holding common square shank auger-bits, or, by removing the socket, round shank machine auger-bits can be used. Six sizes of bits go with the machine,  $\frac{3}{8}$ , 7-16,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and 1 inch. All additional bits are charged extra. Tight and loose pulleys, 8 inches in diameter,  $3\frac{1}{2}$  inch face, and should make 400 revolutions per minute.



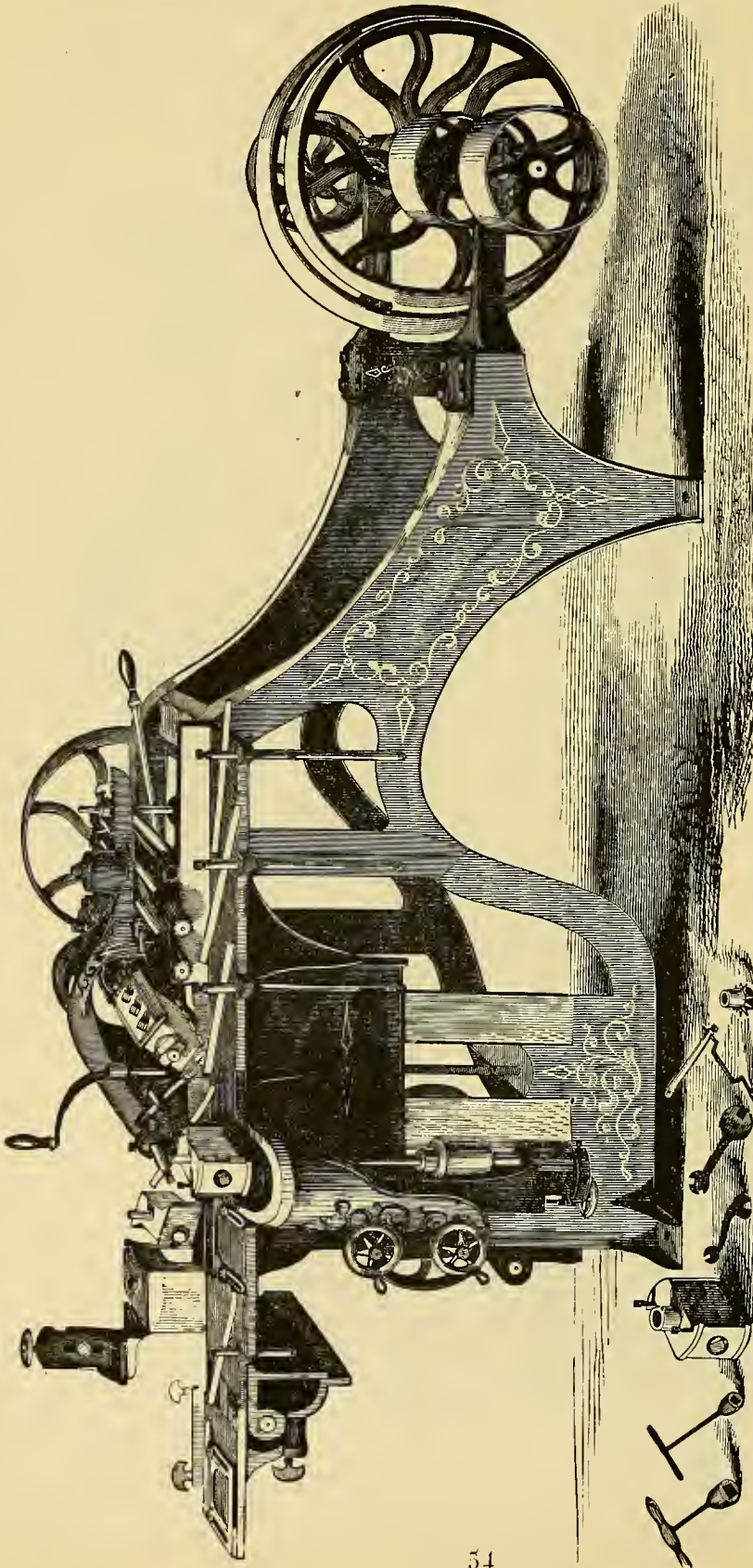
## Light Moulding Machine.



This machine will stick sash, stick mouldings on three or four sides while once passing through the machine, raise panels, plane blind shades and round the edges at the same time; groove door slits, or rails, and stick mouldings on the in at the same time, or joint the edge, plane and joint pickets, &c. It is built ENTIRELY OF IRON AND STEEL. The bed is gibbed on to the frame, so as to be firm, and is moved up or down by a single screw, with crank, requiring no set screw to hold it in place, thus saving much time in setting it. It has four rotary cutter heads, one above the table like a sash machine, which lies horizontal, two upright ones, by the sides of the table, and an under one when required, so arranged that one of them may be moved up or down, out or in (and set on any angle so as to cut any required bevel with a straight cutter), with a screw and crank, at the option of the operator. The caps on the heads which hold in the cutters are made of WROUGHT IRON; the cutter shafts are of the best cast steel, as are also the feed rolls. The cutter shafts are arranged so as to PREVENT ALL VIBRATION endwise. Tight and loose pulleys, 9 inches in diameter, 4 inch face, and should make 850 revolutions per minute.



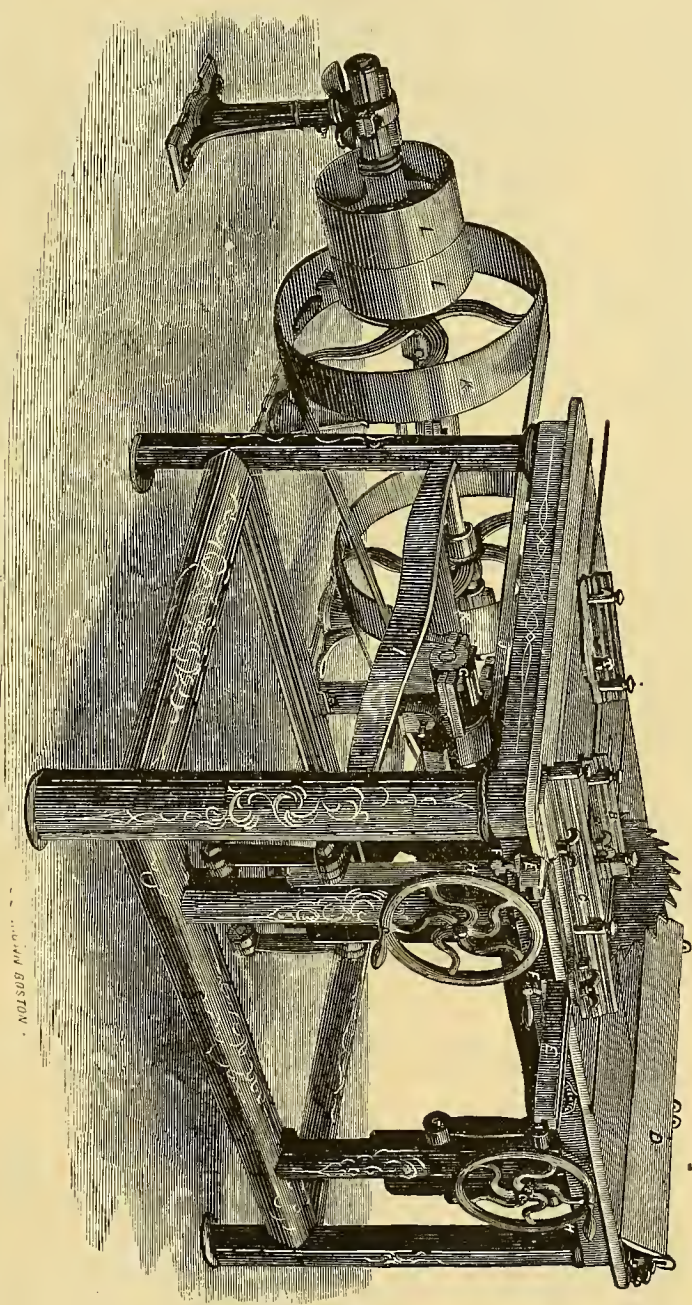
## Improved Moulding Machine.



This machine will do a great variety of work, such as sticking sash, getting out sash and blind rails and tiles, grooving and jointing door rails and stiles, planing fence pickets on all sides at the same time. It works four sides of stuff six inches wide by three inches thick. Being built entirely of iron and steel, with the frame cast in a single piece, it is very firm and strong, and must always remain true. The table is firmly gibbed to the frame, and raised or lowered with a single screw, needing no set screws to keep it in place firmly. The table drops about 14 inches, so that any width of door rails can be grooved and jointed by it. The caps to the cutter heads are wrought iron; the cutter shafts are cast steel. The outside cutter head is adjustable to any angle or can be moved in or out, or up or down, with screws. The cutter heads and their shafts are made and balanced with the greatest care, so that they can be run at a very high speed, which is very essential in doing good work, especially where one cut is against the grain of the wood. A patent spur feed is applied to this machine, which is very useful in grooving door stuff, and many other kinds of work where long teeth can be applied to that part of the work that the forming cutters remove. This feed not only breaks up the wood, thereby fitting it for the cutters, but makes the feed perfectly sure. This machine is built in the most careful and thorough manner, and is thoroughly tested before leaving the works, and is warranted to give satisfaction on a trial of thirty days. Tight and loose pulleys on counter-shaft, four inch face by nine inches in diameter, and should run 900 turns per minute.



## Adjustable Circular Saw Bench.

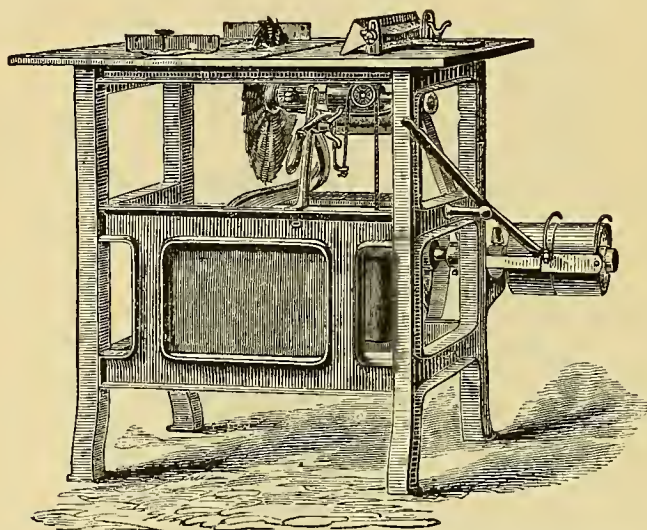


The attention of all interested in Circular Sawing Machines is called to the above representation of an improved Circular Saw Bench, and we feel assured, that upon examination, its merits will be apparent to every one. It gives entire satisfaction wherever it is used. The following is a description of its parts: A, B and C are adjustable slide rests, used for squaring and sawing any desired angle. D is the splitting gauge, or rest, adjustable to a mitre. E E are extension slides. F F are handles to fasten extension slides at any desired place. G G, the self-rolling arbor boxes. I I, the adjustable swinging frame that the boxes rest on. H H are hand wheels which raise and lower the saws. J, the belt from the counter-shaft. K K, driving pulleys, 24 inches in diameter, 6 inch face. L L, tight and loose pulleys, 12 inches in diameter, 6 inch face. There are four kinds of this machine, viz.: No. 1 (large size), for two saws—size of top, 68½ by 42½ inches; No. 2 (large size), for one saw—size of top, 50 by 42½ inches; No. 3 (medium size), for one saw—size of top, 50 by 42½ inches; No. 4 (small size), for one saw—size of top, 42 by 42 inches. They are all furnished complete with counter-shaft and self-rolling loose pulleys.



# Gear's Illustrated Catalogue of

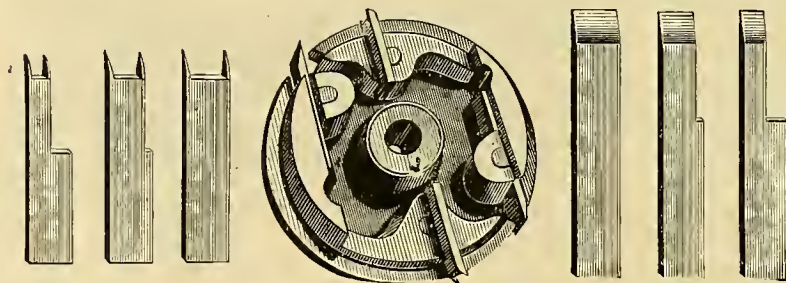
## Adjustable Circular Saw Bench.



The Saw Bench illustrated above is all iron and steel. The table is 36 by 36 inches and made fast to the frame. It has a splitting rest adapted to sawing bevels, and two squaring rests, which are made to swivel and slide in grooves, one each side of the saw, for sawing miters. The saw arbor is run in bearings at the upper end of a frame swung from the bearings of the counter-shaft. The bearings are self-oiling. The saw is nicely balanced, and can be instantly raised or dropped to any desired position above the table, and firmly held there by simply turning a thumb-nut. A grooving head can be run upon the arbor if desired, a section of the table being made to take out for that purpose. This Saw Bench is compact and well built in all its parts. The ease with which it can be adjusted, its adaptedness to any kind of work, and its accuracy of execution, will commend it to all desiring a single adjustable saw bench for pattern-making, or other similar work.

There is another Saw Bench similar to this, made by the same parties, with two saws, and having a table 38 by 44 inches. The section between the two saws can be readily removed in case a grooving head is to be used upon one of the arbors. It is furnished with a bevel rest, two short squaring rests, swiveled for mitering, and also a long squaring rest. All the rests slide in grooves, and can easily be removed to admit of sawing long stuff. The saw arbors are swung from the bearings of the counter-shaft as before, and are so adjusted that only one saw appears above the table at a time. In fact, the raising of one saw drops the other, thus making impossible the accidents which so frequently occur while using those double saw benches where each saw is operated independently. One saw can be dropped and the other raised to any desired height above the table and firmly fastened there in two seconds. If desirable, both saws can be brought above the table at the same time, by fastening the one already up, and then lifting the other to the required height and fastening it there, but not when each arbor swings naturally.

## Grooving Head and Cutters.

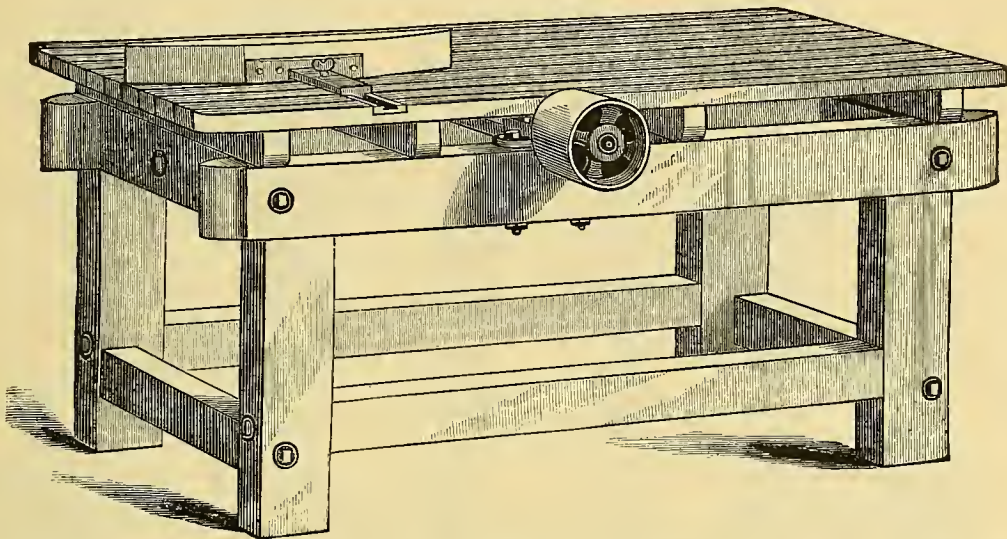


This head is used for cutting gains and grooves across the grains on various kinds of work, such as window frames, door stuff and cabinet work. It can also be used in a Tenoning Machine, by having it fitted with an arbor to suit the machine.



# Wood and Iron Working Machinery.

## Splitting Saw Table.



The above cut represents a Splitting Saw Table, made in the most thorough and workmanlike manner from selected and well-seasoned Western ash, with birch, maple or cherry tops, made from narrow strips glued together. The top is hinged at one end and has a raising screw (not shown in the cut), for elevating the top so as to accommodate itself to the stock to be sawed. The Splitting Gauge, which is furnished with each machine, is shown in the illustration. A grooved track is let in on the top, and a light Cut-off Carriage is added when ordered.

There are six sizes of this machine, of the following dimensions:

No. 1 is 2 feet 10 inches wide by 3 feet 8 inches long; size of pulley, 4 inches in diameter,  $4\frac{1}{2}$  inch face, with No. 1 cast steel arbor.

No. 2 is 3 feet wide by 4 feet long; the pulley is  $4\frac{1}{2}$  inches in diameter, 5 inch face, with No. 2 cast steel arbor.

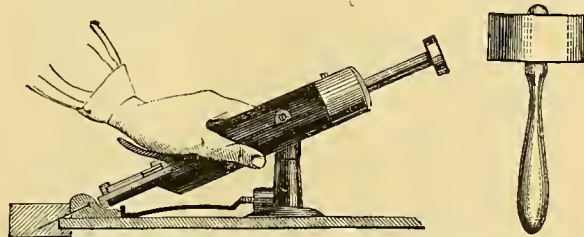
No. 3 is 3 feet 3 inches wide by  $4\frac{1}{2}$  feet long; size of pulley, 5 inches in diameter, 5 inch face, with No. 3 cast steel arbors.

No. 4 is 3 feet 6 inches wide by 5 feet 6 inches in length; the pulley is 6 inches in diameter,  $6\frac{1}{2}$  inch face, with No. 4 cast steel arbor.

No. 5 is 3 feet 8 inches wide by 5 feet long; the pulley is 7 inches in diameter, 7 inch face, with No. 5 cast steel arbor.

No. 6 is 3 feet 10 inches wide by 6 feet long; the pulley is 8 inches in diameter, 8 inch face, with No. 6 cast steel arbor.

## Thorndike's Brad Driver.

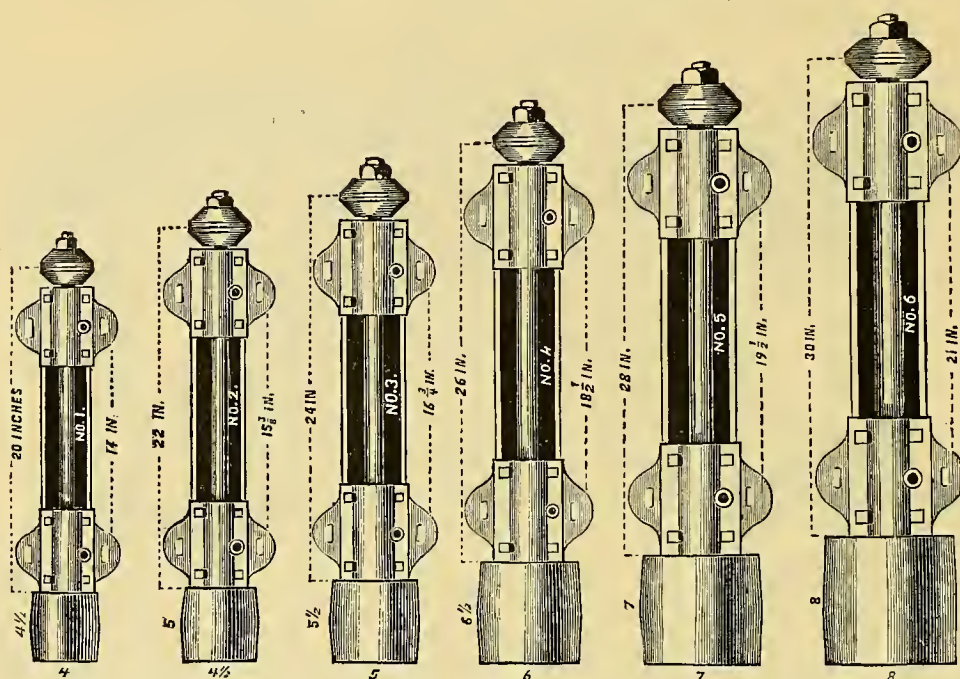


This machine, as the cut indicates, is for nailing mouldings to the panels of doors. The durability and simplicity of this machine, and the rapidity with which the work can be done over hand labor, makes it almost an indispensable article to manufacturers, or those who only make doors for their own business. Being so generally used a further description is unnecessary.



# Gear's Illustrated Catalogue of

## Patent Saw Arbors,



### With New Patent Self-Oiling Boxes.

The above cuts represent six sizes of Saw Arbors. These arbors are made of the best cast steel, with the best of workmanship, and are warranted to give perfect satisfaction. The boxes are connected together by a strong web bed, and cannot get out of line. A new patent self-oiling box is used, which is simple, very effective, easily cleaned when necessary, and lined with the best quality of Babbitt metal. The bearings are long, which makes them durable, and prevents all springing or trembling of the arbor when in use. The journal next to the collar has several grooves in it, with corresponding rings in the box-lining, which prevents all lateral or end motion, and keeps the saw always in its place.

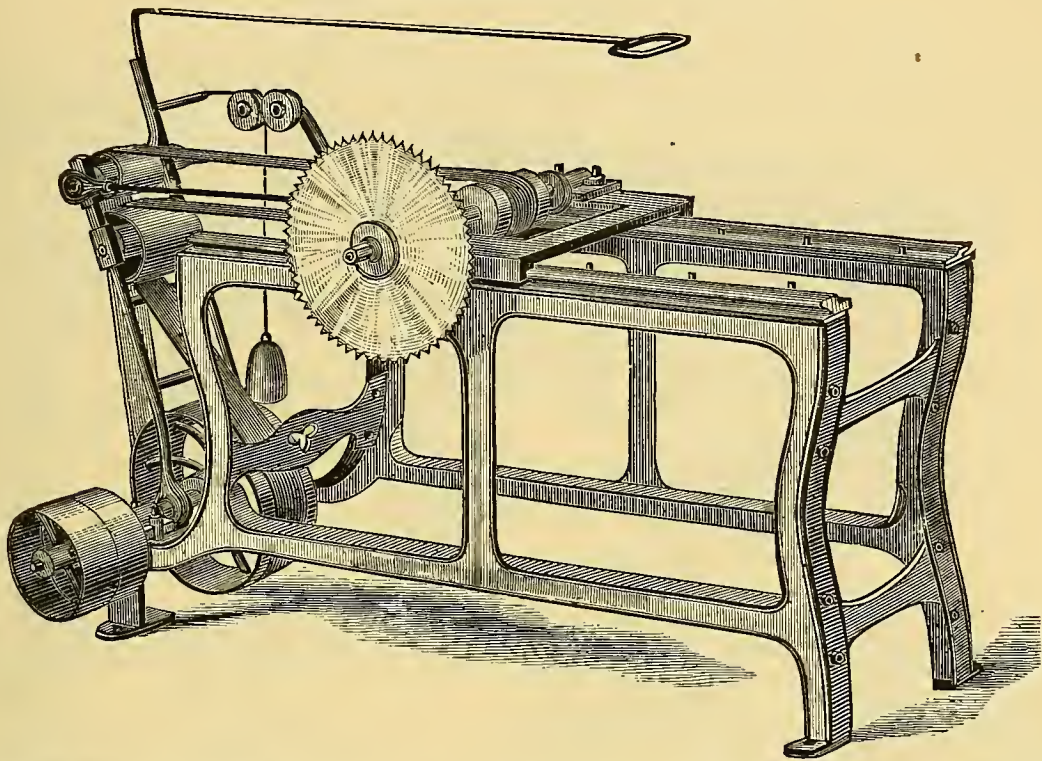
### Dimension Table.

Number of Arbors,.....	1	2	3	4	5	6
Size of Saw (inches),.....	10	14	18	24	28	36
Distance from centre to centre of ear-pieces (inches),.....	14	15 3/8	16 3/4	18 1/2	19 1/2	21
Distance between Pulley and Saw (inches),.....	20	22	24	26	28	30
Diameter of Pulley (inches),.....	4	4 1/2	5	6	7	8
Face of Pulley (inches),.....	4 1/2	5	5	6 1/2	7	8
Diameter of Collars (inches),.....	3	3 1/2	4	4 1/2	5	5 1/2
Diameter of Arbors (inches),.....	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4
Hole in Saws (inches),.....	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
Length of Bearings (inches),.....	5	5 1/2	6	6 1/2	7	7 1/2



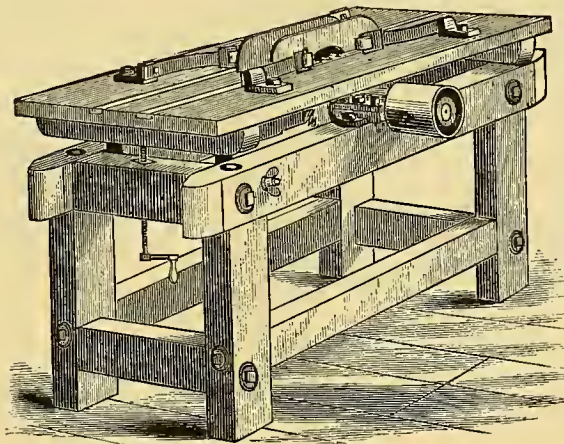
# Wood & Iron Working Machinery.

## Common Railway Saw.



This saw is specially adapted for cutting up box-boards and all light lumber, and is extensively used in door, sash and blind shops, cabinet and furniture manufactories, &c. The saw arbor is cast steel, running in Babbitted boxes, and attached to the sliding carriage. It is very easy to operate, and a large amount of lumber can be sawed up in a day. It has a substantial iron frame, and is well finished. The size of hole required for the saw is one inch. The tight and loose pulleys are  $8\frac{1}{2}$  inches in diameter,  $3\frac{1}{2}$  inch face, and should revolve 600 times per minute. Weight, boxed, 650 pounds.

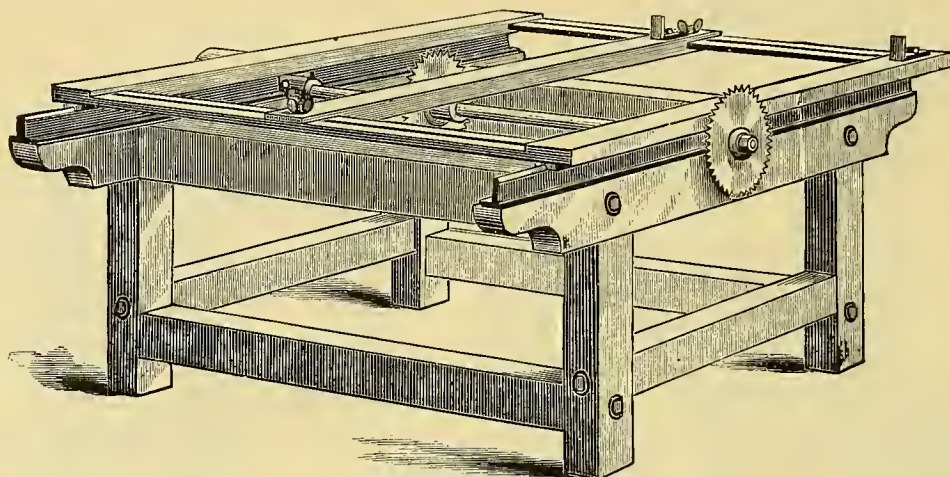
## Box Board Matcher.



This machine is particularly designed to meet the wants of box makers, but is suitable for other light work. It has two sets of saws running on the same arbor—one for tonguing, the other for grooving. It will work stuff up to  $1\frac{1}{4}$  inch thick. The frame is made of hard wood, is strong and substantial, and four feet long and twenty inches wide. The pulley on the arbor is  $4\frac{1}{2}$  inches in diameter, 5 inch face, and should make 3,000 revolutions per minute.



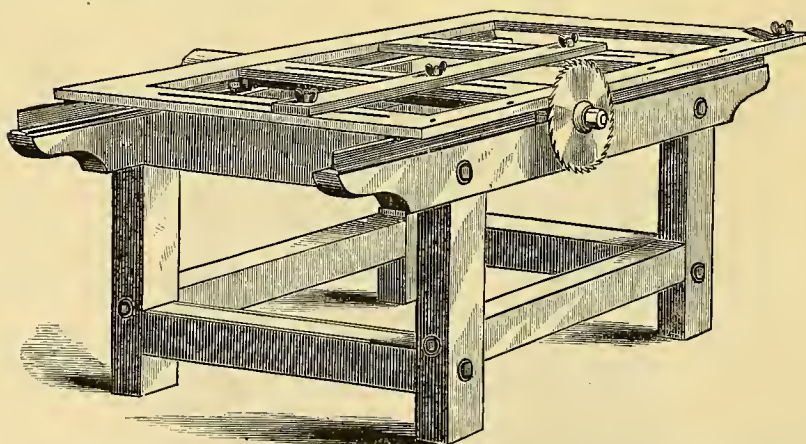
## Box Board Double Cut-off Saw.



This machine is especially adapted to the work of making packing boxes. It cuts both ends of the stock at the same time. One saw is on an adjustable collar, which can be readily changed from one length to another. The arbor is made of the best cast steel,  $1\frac{3}{4}$  inches in diameter. The pulley is 5 inches in diameter,  $5\frac{1}{2}$  inch face, and should make 3,000 revolutions per minute.

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## Box Board Edging Saw.

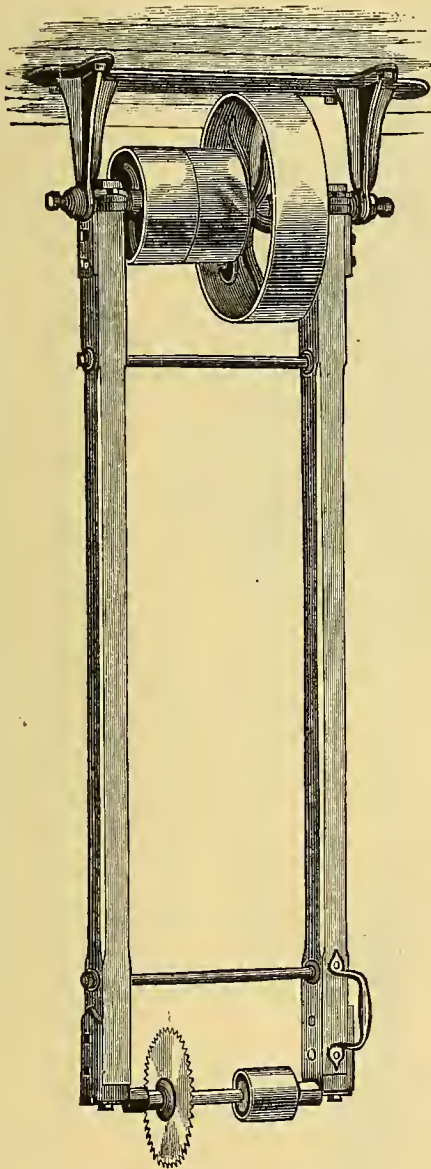


This machine is used by box makers for fitting up stock, and is an indispensable machine in a box manufactory. The arbor is made of the best cast steel,  $1\frac{1}{2}$  inches in diameter. The pulley is 5 inches in diameter,  $5\frac{1}{2}$  inch face, and should make 3,000 revolutions per minute.



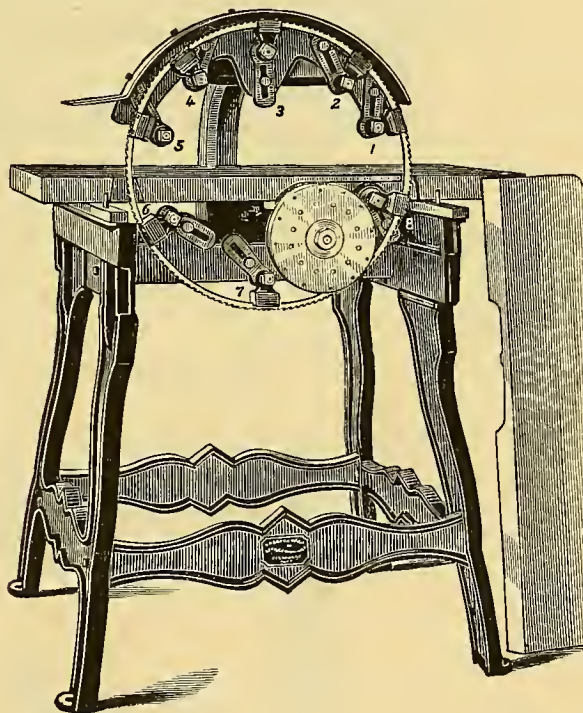
# Wood and Iron Working Machinery.

## Swing Cut-off Saw.



This machine is extensively used for cutting up stock for packing boxes, and any other light work, where it is required to be done in an expeditious manner. It has a counter-shaft, hangers and pulleys complete. The tight and loose pulleys are ten inches in diameter, four inch face, and should make 900 revolutions per minute. In ordering this machine give the distance between floors.

## Patent Ring Saw Machine.

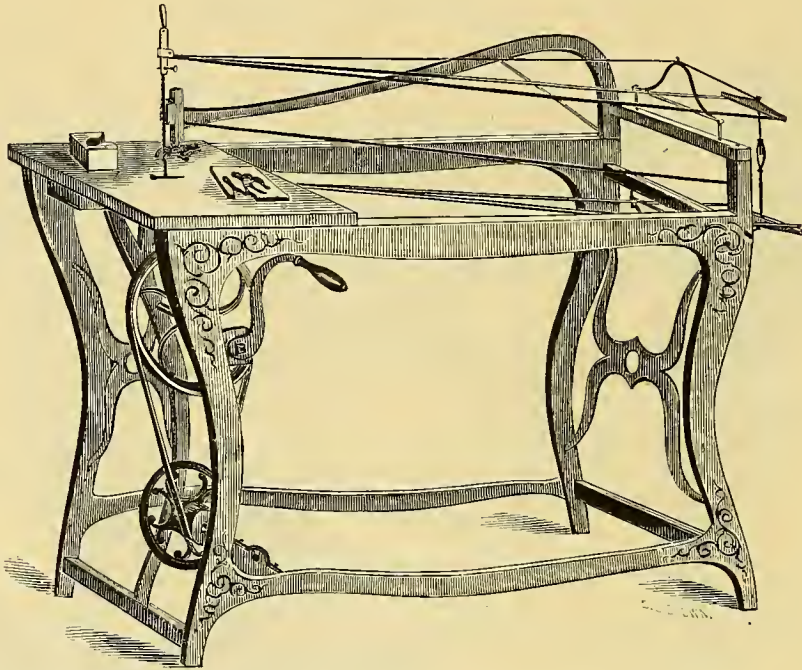


The Patent Ring Saw is designed for use in chair and furniture shops, and places where jig and scroll sawing is required. It has been in constant use for two years. But little labor is required to finish work sawed by this machine, as the saw being thinner back of the teeth, requires but little set, and consequently will saw smooth. Work done with the band saw can be done with this saw equally as well and with less labor and expense in keeping the machine in repair. The inside of the saw fits into a groove on the driver, which revolves the saw, so that the greater amount of work on the saw, the tighter the friction holds it; and when the saw is not at work, the friction is only sufficient to revolve the saw, thus consuming no more power than is required to do the work. On the opposite end of the driving shaft from the friction wheel are two pulleys, tight and loose, to receive a 2½ inch belt, and this shaft should revolve 1700 turns per minute. The saws can be used from ¼ to 1 inch wide.



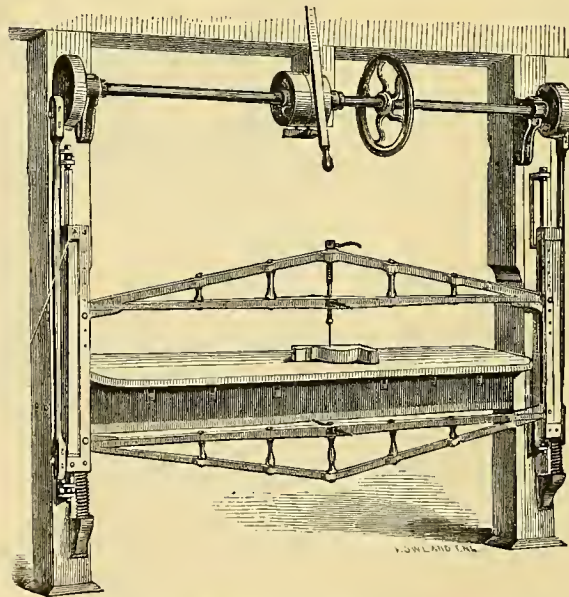
# Gear's Illustrated Catalogue of

## Foot or Hand Power Scroll Saw.



Parties not having power will find this a convenient machine, saving time and labor. It will work from the lightest up to four inch stock. It is strongly built and runs very easy.

## Jig or Gate Saw.

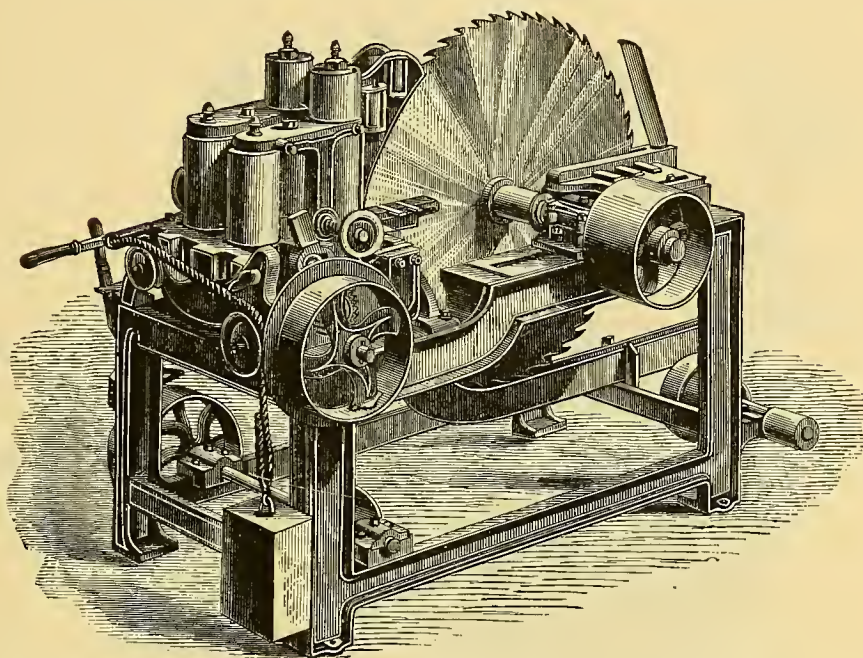


This cut represents a Jig or Gate Saw, for sawing all kinds of light work. It will run steady and without shaking the floor it stands upon. It has a four-foot gate, and will do very fine work.



# Wood and Iron Working Machinery.

## Circular Re-Sawing Machine.



This saw is constructed to set the feed-rolls oblique with the saw so as to saw siding. The rolls are adjusted simultaneously by tipping the table on which they are placed, so that if set to saw the board through the center of the edge, the rolls after being set oblique, require very little or no adjusting to saw two perfectly uniform siding boards from one piece. The feed is driven by iron cones, and may be made self-centering, so as to saw through the center of the board, dividing the inequalities of thickness, as may be desired, by simply changing the position of a single screw.

There are three sizes of this machine, viz.: One with four feed-rolls, all geared, with a saw 30 inches in diameter. Another with the same number of feed-rolls, all geared, and a saw 36 inches in diameter. The third and largest size also has the same number of feed-rolls, all geared, and a saw 42 inches in diameter. The receiving pulley on the saw arbor for a 30-inch saw is 12 inches in diameter and 6 inch face. For 36-inch saw, 13 inches in diameter, 7 inch face. For 42-inch saw, 14 inches in diameter, 8 inch face. It will be changed to suit the purchaser. The circumference of the saw should run 9,000 feet per minute.

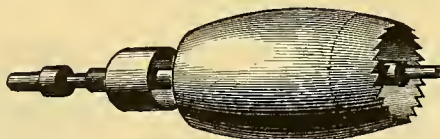
## Cast Steel Cylinder Saws.

Figure 1.



Cylinder Saw.

Figure 2.



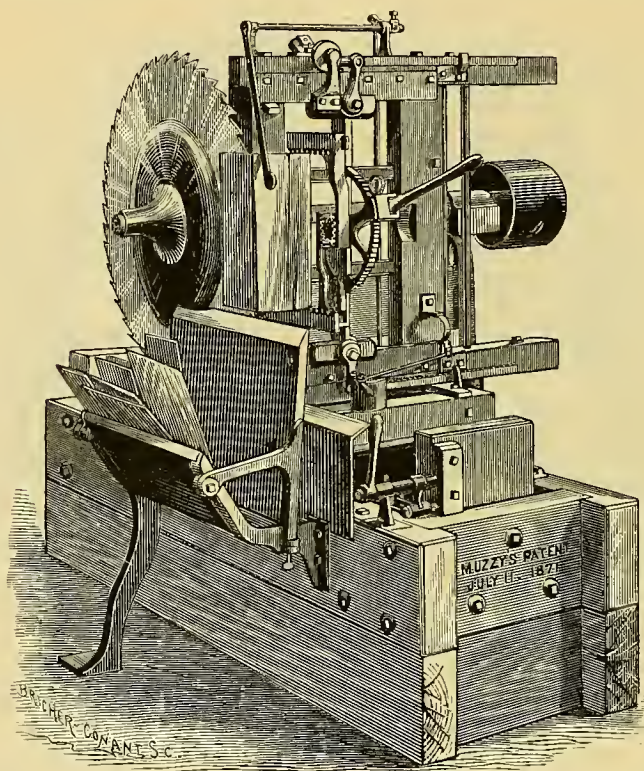
Bilging Cylinder Saw.

Figure 1 represents an improved Cylinder Saw—tapered, patent ground, smooth inside, without any projection, and made from the best quality of stock. Figure 2 represents a Patent Ground Bilging Cylinder Saw for Nail Kegs. Every Cylinder Saw is thoroughly inspected and tried in a frame at high speed, and is not permitted to leave the works until perfectly balanced and true.



# Gear's Illustrated Catalogue of

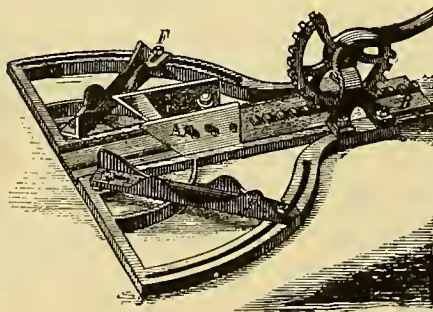
## Improved Shingle Machine.



The above cut represents Muzzy's Patent Horizontal Shingle Machine. It is claimed for this machine that it is more perfect in its mode of operation and in its construction than any other shingle machine yet produced. The thickness of the shingle is gauged by a "lock set-work," similar to that used in the most approved machines of the old style; therefore, any competent sawyer can understand and operate it. It saws up a tapering block as closely as a square one, frequently sawing three or four shingles from the large end after the small end is out, thus obtaining all the shingles possible from the block. The shingle block stands upright, the saw commencing to cut in the middle of the block, and the carriage stopping when the shingle is cut off, whether wide or narrow. It can be easily arranged for sawing box boards or barrel headings.

## Improved Adjustable Mitering Machine.

This machine is light and durable and can be worked either upon the bench or floor. It can be easily packed in a carpenter's tool chest. It is a semi-circular bed of iron, size 15 by 22 inches, upon which are mounted hinged and sliding knives, and movable guides, with a lever, segment and rack. The knives, A, are secured to wings, which are hinged at the bottom to a movable

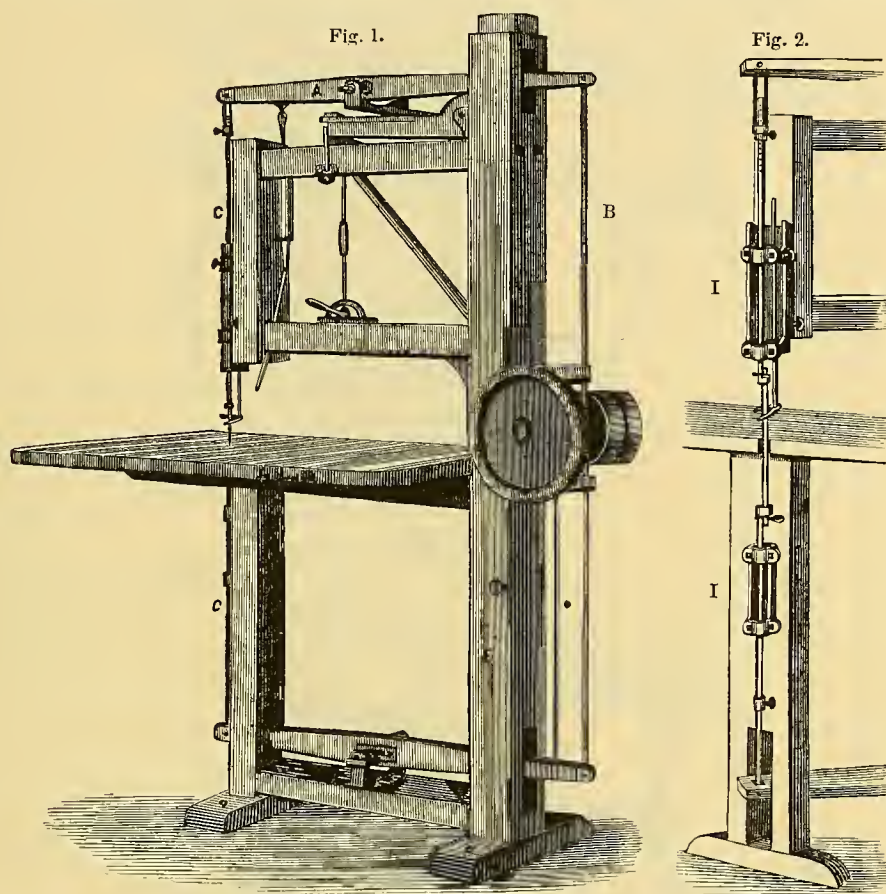


carriage, B, which slides in grooves in the bed, and is propelled by means of a toothed rack on its upper rear surface, engaging with the toothed segment on the lever, C. The cutters are, by set screws in the wings, so regulated as to prevent their drawing or crowding. Rests for holding the strips to be mitered at any angle are seen at F. It does a great variety of work.



# Wood and Iron Working Machinery.

## Gear's Patent Non-Shaking Balanced Jig Saw.



This cut gives a perfect illustration of our improved Jig Saw. By an arrangement in its construction, whenever the post is in the way in sawing long stuff, the position of the saw is changed instantly by turning the rods containing the saw around (see Fig. 2), besides being greatly improved in other ways.

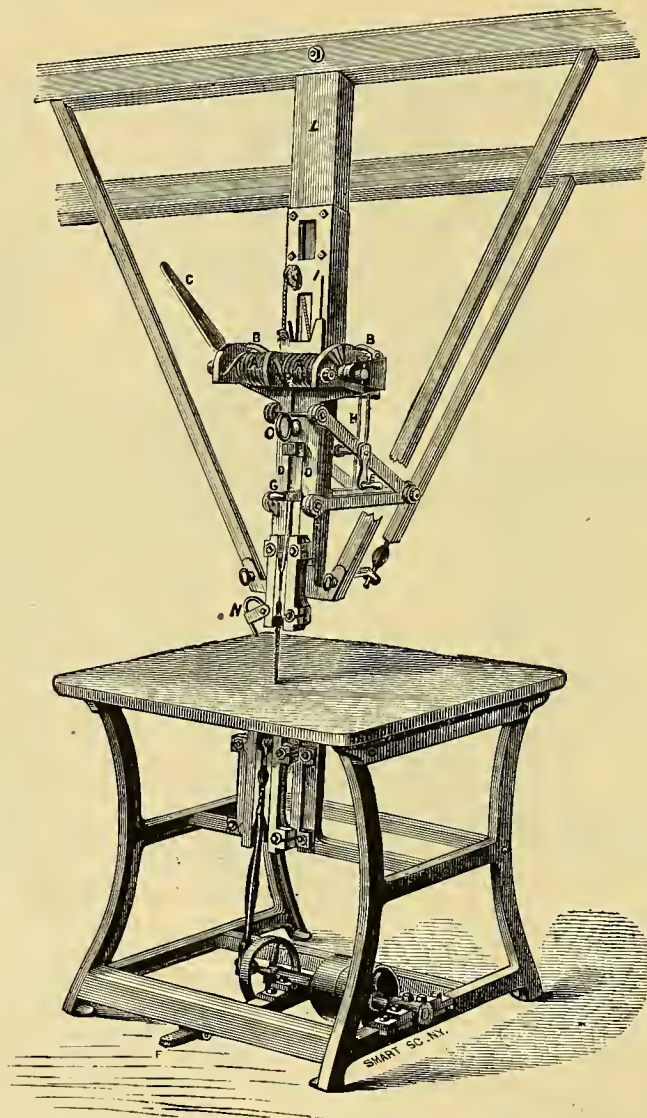
The following description of the machine will show that it is in every way first-class: It will be seen that the main working parts of the machine are two levers, A A, one connecting rod, B, pitman, E, connecting crank pin on balance wheel to bottom lever. At the other end of the levers are seen two steel rods, C C, that connect with two slides that run in boxes, I I; the saw is attached between the two boxes. The saw is strained or loosened in a simple manner, as seen in the engraving, by the screw and rod seen at the center of the upper part of the main frame. By turning it from right to left it raises the top lever. It requires one motion of the cam (handle of the cam) to move it in loosening or fastening the saw. In this way the saw may be taken out as many times as is desired and strained to the same tension each time without any care. Saws from 10 to 16 inches may be used in this machine, sawing 7 inches in thickness.

The advantages claimed for this saw over all others, are, *it does not shake* the floor it stands on, or the one over it. It takes one-third less room, and one-third less power; runs fast, is all clear on one side, there being but one post, which is out of the way from the saw and material operated upon. It will not shake because there is an equal amount of weight at each end of the levers. When one end jerks up the other end jerks down—exactly balancing—consequently it is non-shaking. All will readily see the advantage of getting rid of one fender post.

The advantages of our saw over those drawn up by springs and straps, can easily be estimated. We get a *uniform strain*, and as much *strain* as we please. Every saw is tested and warranted. The pulleys are 7 inches in diameter and should run about 500 turns per minute. Testimonials from parties using them will be sent on application.



## Spiral Spring Sawing Machine.

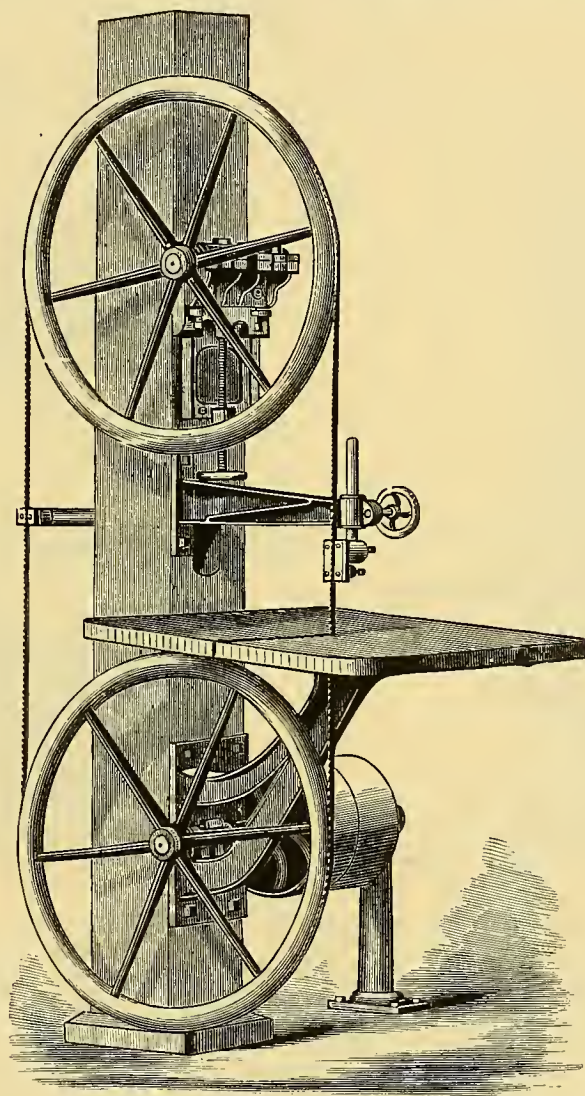


The above cut represents the machine set up in perfect order. A A are two spiral springs made from Jessup's best imported English steel. Each spring contains ten coils of  $\frac{1}{2}$  or  $\frac{3}{8}$  round steel rod, one being a right hand, the other a left hand coil. One end of each of these springs is firmly fastened to the ratchets, B B; the opposite ends to the front end of the lever, F, which is supported upon the shaft passing through the centre of the springs, and so constructed that there is no friction whatever upon any part of the springs when in motion. The link, H, which is of iron, connects the upper lever, F, with the lower lever, G. These levers are so connected, that when the saw is moving a five inch stroke, the first coils of the springs, A A, move but one-eighth of an inch, the second coils but one-ninth of an inch, and so on, down to nothing, making the average movement of the coils but one-sixteenth of an inch. The upper cross-head which carries the top of the saw is firmly connected to the lever, G, thus making a positive connection between the saw and springs. This insures a perfectly rigid strain on the saw. By means of the ratchets, B B, and lever, C, any amount of strain can be given, from ten to seventy-five pounds, according as it is a small or large saw. This is done by taking hold of the lever, C, which is inserted into the sides of the ratchets, B B, and thus winding or unwinding the springs, A A. Each spring and ratchet is independent of the other, so that you can use one or both springs. The tension on the saw by this means can be changed in a moment, while the machine is in motion. A plunger pump is attached to the inside of the iron plate, D D, with a rubber pipe running to the saw, and is worked by the motion of the lever, G. The two springs, with all their connections, are permanently fastened to the iron plate, D D, which is raised or lowered to suit any length of saw by means of the crank, E, and held in position by the thumb screw, O.



# Wood and Iron Working Machinery.

## New Band Sawing Machine.

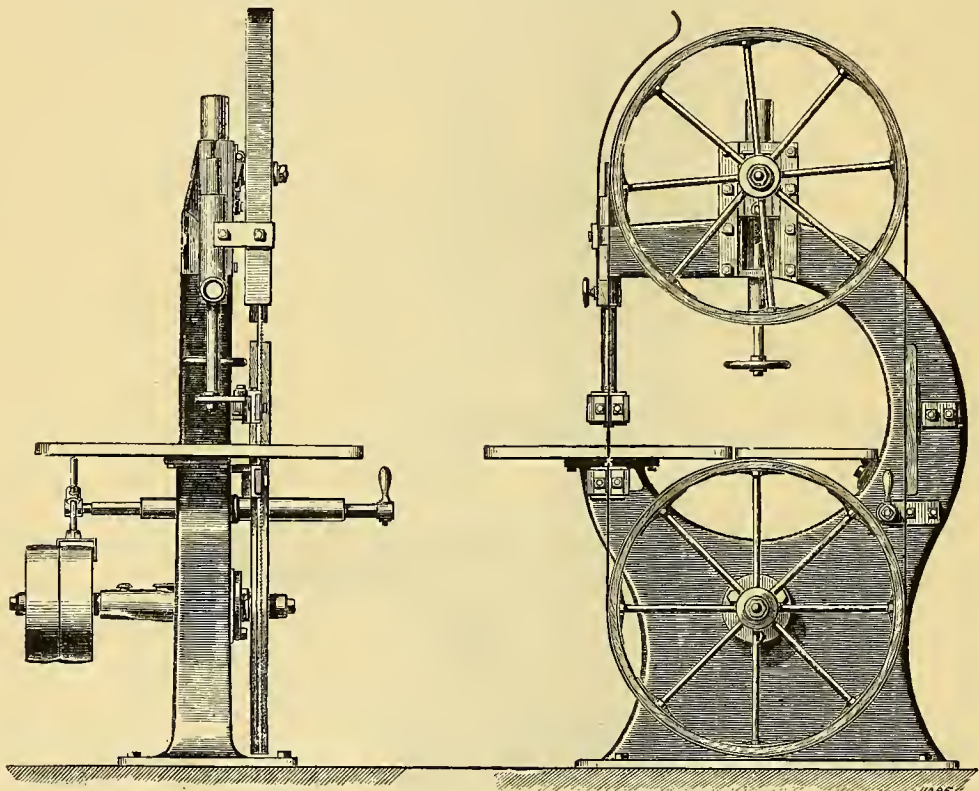


Wood Frame.

The above cut represents a new and improved Band Sawing Machine, which is selling at a much less price, considering its capacity, than any other in the market. This machine has been constructed with special reference to the wants of wheel and carriage manufacturers, and that class of customers who want a machine at a low price. It is capable of carrying saws from one-fourth inch to 2 inches wide. The saw pulleys are 44 inches in diameter; have wood rims, and are covered with leather. The post is of wood, 10 feet long, 11½ inches square, glued up. The table is 39 by 33 inches, 1½ inch thick, made of hard wood strips, 1½ inch wide, glued together, and can be elevated to an angle of 27 degrees. A slitting gauge and slide rest can be fitted to the table, if wanted, at an extra charge. Brazing and filing tools are furnished with the machine without extra charge. The tight and loose pulleys are 16 inches in diameter, 4 inch face, and should make 275 revolutions per minute.



## Improved Band Sawing Machine.



No. 1.

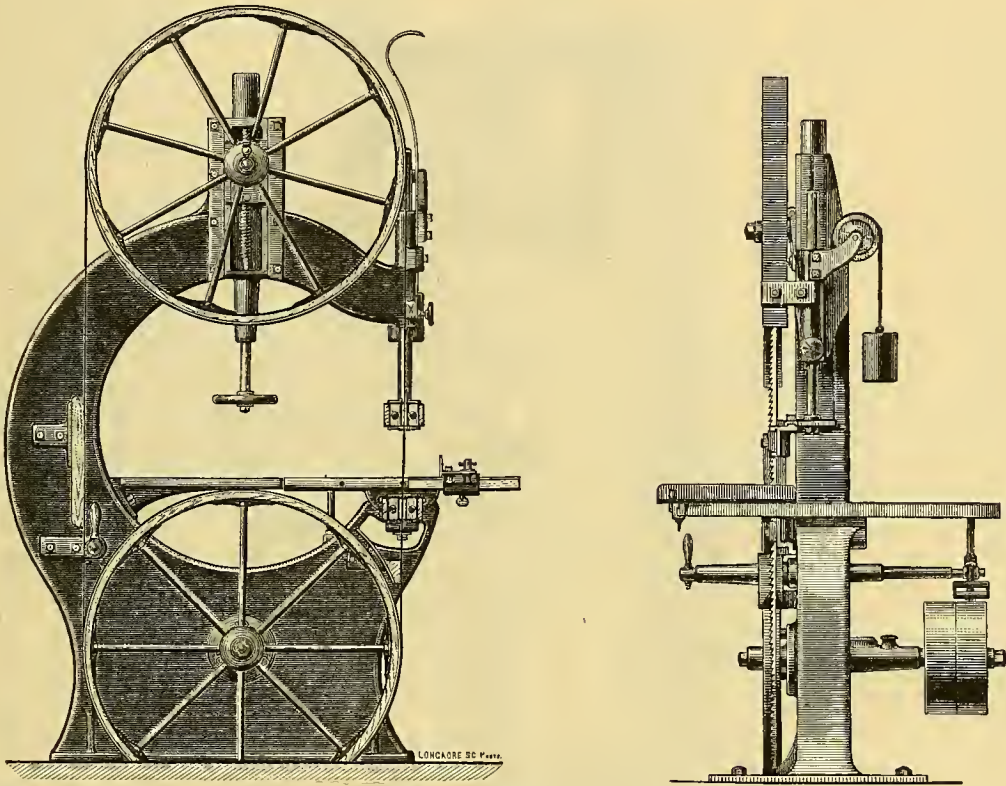
Richards, London & Kelley are the manufacturers of this machine. The frame is cast whole in one piece. The table is *fixed*, made of iron, and planed true. The wheels are thirty-six inches in diameter, of wrought iron, covered with wood and heavy harness leather. The shafts are of steel; the bearings throughout of hard brass. The guides are adjustable in all directions, and will require no repairs. The guide-stem is counter-weighted, to prevent accident from falling, and to secure convenience in adjustment. The top bearings have fibrous packing and thermatic oil cups. The wheels weigh but forty pounds each, are elastic, strong and safe from accident. The tension is compensating, and always equal, regardless of the temperature of the blade. The lower wheel is protected by a shield that guards against the cuttings getting under the saw blade. Each machine is furnished with one "Perin" saw blade, of any designated width, full set of wrenches, belt shifter, scarting frame, wrought iron tongs, and silver solder for joining the blades. The base of the machine occupies but 21 by 42 inches on the floor. Weight of the machine, with details, 1,600 pounds.

We invite attention to these specifications as comprehending much that is wanting in other machines, and to the fact that while the machines cost a little more to the purchaser they cost a great deal more to build, and that the worth of a band saw depends upon its performance, and the number of blades required to keep it running. We also call attention to the patented improvements, the dates of which will be found cast on each machine.



# Wood and Iron Working Machinery.

## Improved Band Sawing Machine.



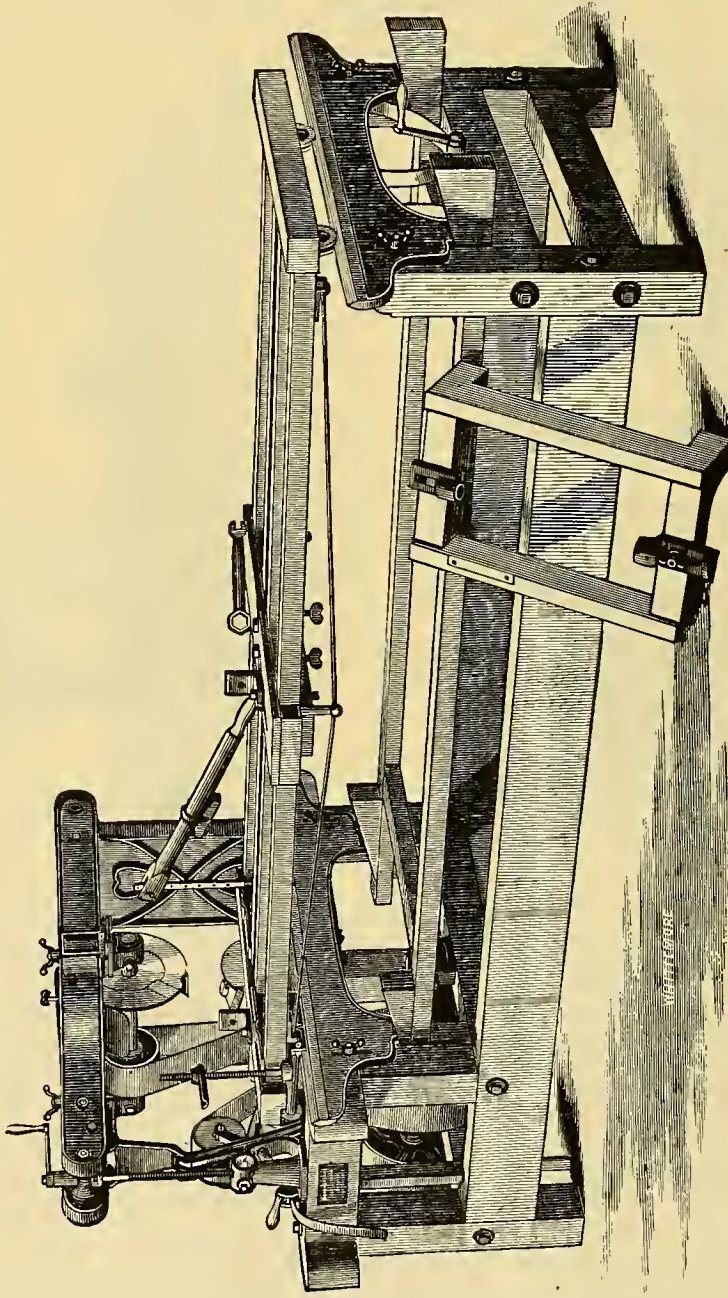
No. 2.

Richards, London & Kelley are the manufacturers of the machine represented by the above engravings. The cuts show the true front and side elevations of the medium size new style machine, from the designs of the manufacturers, which embrace many new and valuable improvements. The frames are cast in one piece, sufficiently heavy to prevent any deflection of the guides by straining the saw. The shafts are steel. The pulleys and wheels are fastened with steel splines. These machines have patent elastic wrought iron wheels, forty inches in diameter. The tension device is arranged with springs, to compensate for contraction and expansion of the blade. The top wheel is hung on a pivoted bearing, to regulate the path of the saw, and the back thrust against the guides. The table is of iron, planed true and pivoted for bevel sawing. It is fitted with improved patent guides, both above and below the table. Each machine is fitted with an adjustable gauge for slitting, which is pivoted so as to be set to the line of the blade. The guide stem is balanced, to prevent accident from falling, and to secure convenience in adjustment. Each machine is furnished with one "Perin" saw-blade, of any designated width, full set of wrenches, belt shifter, scarfing frame, wrought iron tongs, and silver solder for joining the blades. Weight of machine, 1,900 pounds.

We beg to add that we keep in stock a variety of sizes of "Perin" saw-blades, received direct from the exclusive importers, Messrs. Richards, London & Kelley, which are justly celebrated for evenness of temper, toughness, uniformity of thickness, high state of finish and great durability, and of the standard lengths and widths, joined, set and filed, ready for use.



## Patent Improved Large Car Tenoning Machine.

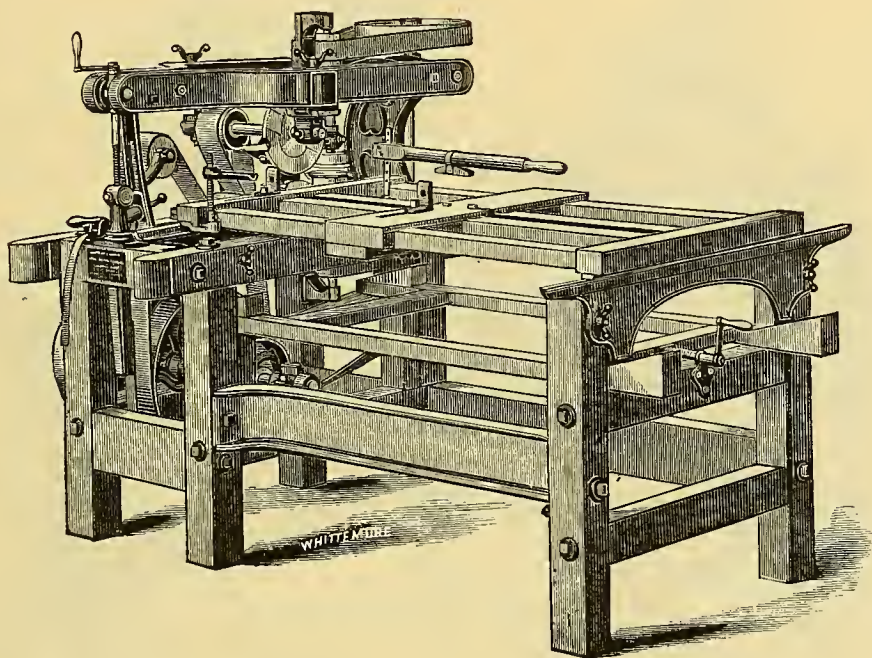


This is a new machine, constructed upon improved principles, to meet the wants of a class of customers who have long felt the need of a machine of this kind. The details have been carried out with great care, with two objects in view, viz.: To obtain the most perfect work, and the largest amount. It is recommended to car builders, railroad shops, and to all who do heavy work, with the most perfect confidence. There is a new improvement on this machine, consisting of a cutter head running on a vertical shaft for making a double tenon, not shown in the above cut. The machine has a heavy substantial iron top frame, the form of which is such as to give the operator a full view of his work at all times. The heads are twelve inches in diameter, and will work twelve inch timber. The cutter head shafts are steel, running in center boxes. The top cutter head is hung in a cross frame or yoke in such a manner as to give it a double adjustment. The head can be adjusted in the boxes, and the cross frame or yoke, with the head secured in its place, can be adjusted to suit the work being done, simply by turning a small hand wheel and screw. The stock used in the construction of this machine is of the very best quality throughout, and the style and quality of finish is claimed to be superior to any other machine in the market. The tight and loose pulleys are twelve inches in diameter, five inch face, and should make 500 revolutions per minute.



# Wood and Iron Working Machinery.

## Patent Improved Tenoning Machine.



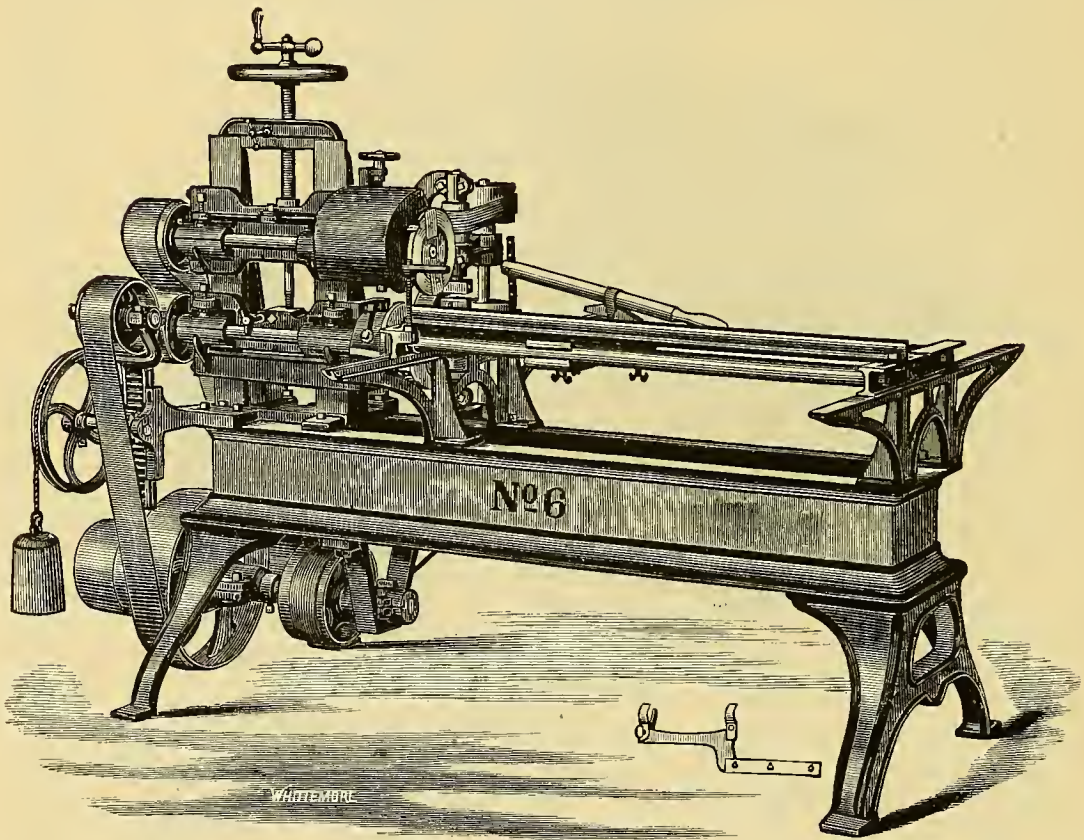
### Medium Size, for Sash and Door Work.

This machine has an iron top frame, the form of which is such as to give the operator a full view of his work at all times. The cutter head shafts run in center boxes. The top cutter head is hung in a cross frame or yoke in such a manner as to give it a double adjustment. The head can be adjusted in the boxes, and the cross frame or yoke with the head secured in its place, can be adjusted to suit the work being done simply by turning a small hand wheel and screw. It has an iron bow girt in front (see cut), which affords a much easier position for the operator while at work. The stock used in the construction of this machine is of the very best quality throughout. The latest improvements are as follows: The raising wedges are faced with steel, which preserves an even surface and works much easier. The head-rail on the carriage is also plated with iron, which prevents its being jammed or worn out of shape. As now made the machine will work tenons six inches long, and any width which can be held on the carriage. The tight and loose pulleys are twelve inches in diameter, four inch face, and should make 500 revolutions per minute. A new style of belt tightener is now being applied to this machine.



# Pear's Illustrated Catalogue of

## Patent Iron Frame Tenoning Machine.



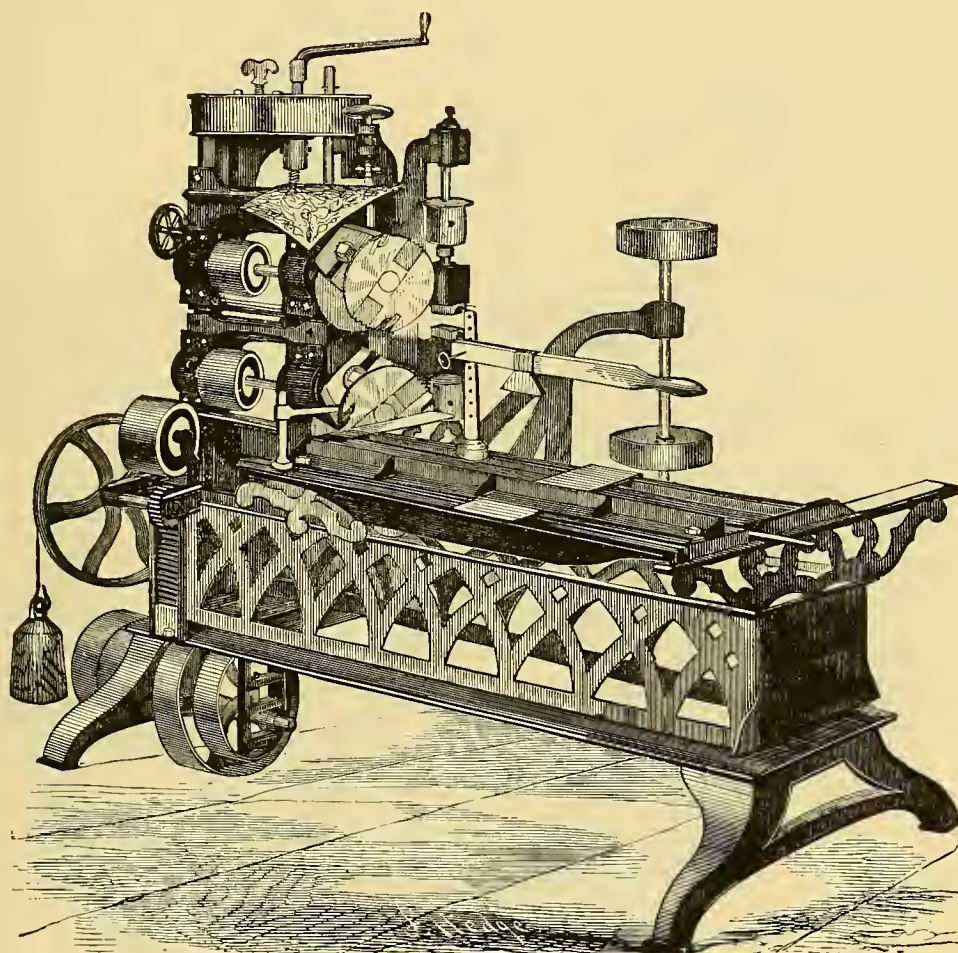
No. 6. Common Size, with Single Heads.

This machine has Single Cutter Heads, overhung, and is intended for sash, blind and door, cabinet, carriage, or other work, cutting a three inch tenon. It has the Patent Adjusting Screw arrangement for the Cutter Heads and Cope Heads, by which all may be adjusted together or separately, as desired. It also has the self-adjusting belt tightener. The heads run on steel shafts in self-oiling boxes. The carriage is made very light, and works easily. It is a convenient and quickly adjusted machine. The machines are fitted with copes, or without, as desired. An apparatus for setting the cutters is furnished with each machine. The tight and loose pulleys are  $8\frac{1}{2}$  inches in diameter,  $3\frac{1}{2}$  inch face, and should make 600 revolutions per minute. Weight of machine, with copes, not boxed, 850 pounds. Power required to drive common tenoner, two horse power. All the internal belts for the machine are furnished. The main driving belt should be  $3\frac{1}{4}$  inches in width.



# Wood and Iron Working Machinery.

## Patent Tenoning Machine.

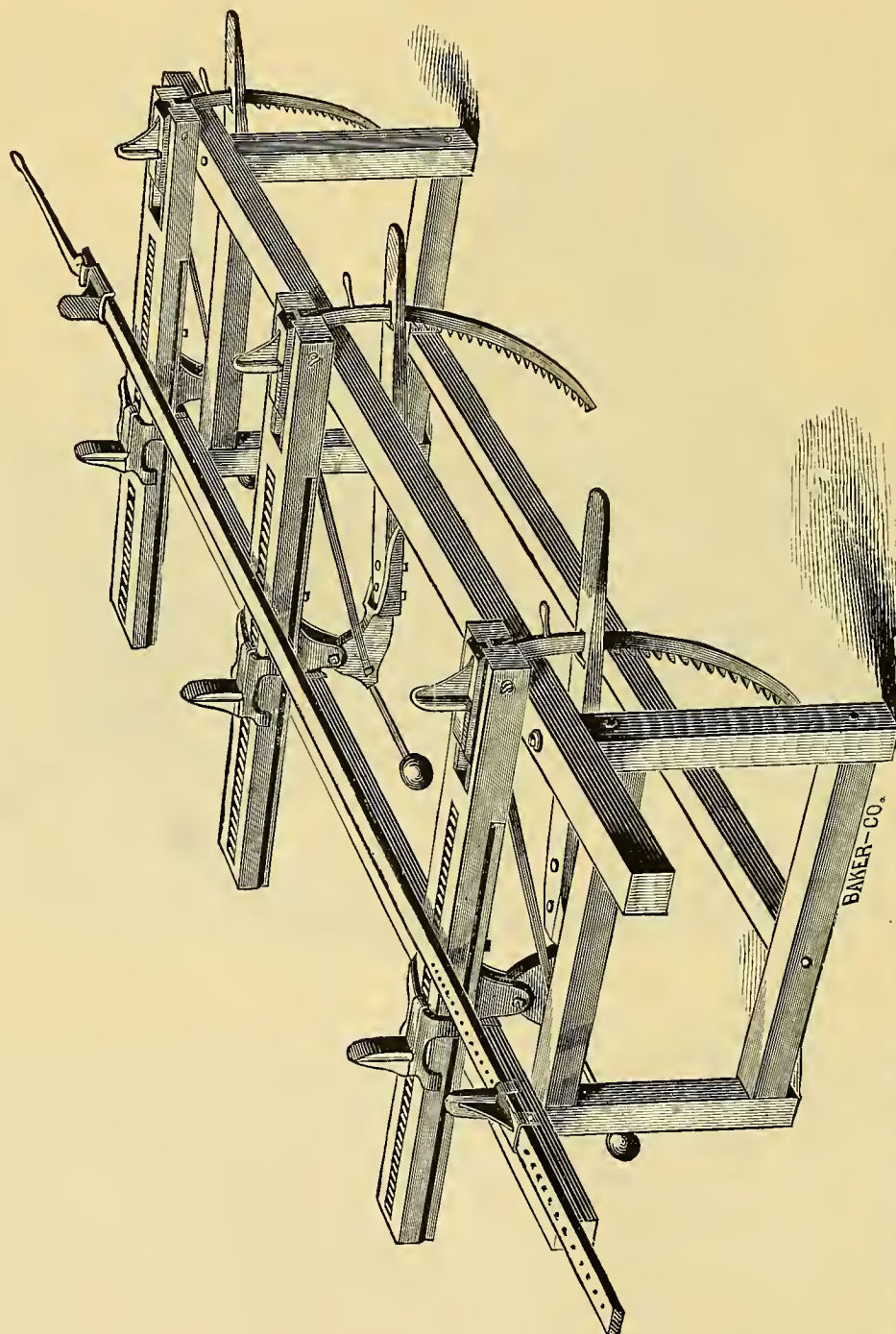


No. 2.

This machine is built of iron and steel, and is simple, firm and durable. Both cutter heads raise and lower by a screw to each, operated by a crank, with a patented device, by which both heads are raised and lowered together, without altering the thickness of the tenon. Each cope is attached to each head stock, in which each cutter head shaft hangs, so that the copes raise and lower with the cutter heads, and need no separate setting. Thus it will be seen how quickly the machine may be set for different thicknesses of tenons—simply by turning screws. Each cutter head shaft has a peculiar arrangement which prevents ALL VIBRATIONS ENDWISE, and both run in long Babbitted bearings. The cope shafts are arranged in the same manner. A single screw slides the top cutter head over the other, so as to cut one shoulder of tenons longer than the other when desired. The copes move out and in or up and down with single screws. Saws are used in cutter heads instead of “spurs,” and seldom need sharpening, and are more easily kept in order. The shape of the cutters is such that they cut very easily, and are easy to grind. They are also very convenient to get at on the machine. The belt which drives the cutter head shafts, when once laced together, NEVER NEEDS ANY ALTERATION, as a binding pulley operates against the laced side of it, operated by a weight and pulley, so as always to keep the belt tight, and always to be SELF-ADJUSTING, and as the belt covers nearly the whole surface of the pulleys, the speed of the cutter heads cannot be checked while doing any kind of work ever required. The frame of the machine being narrow, is not in the way of the workman.



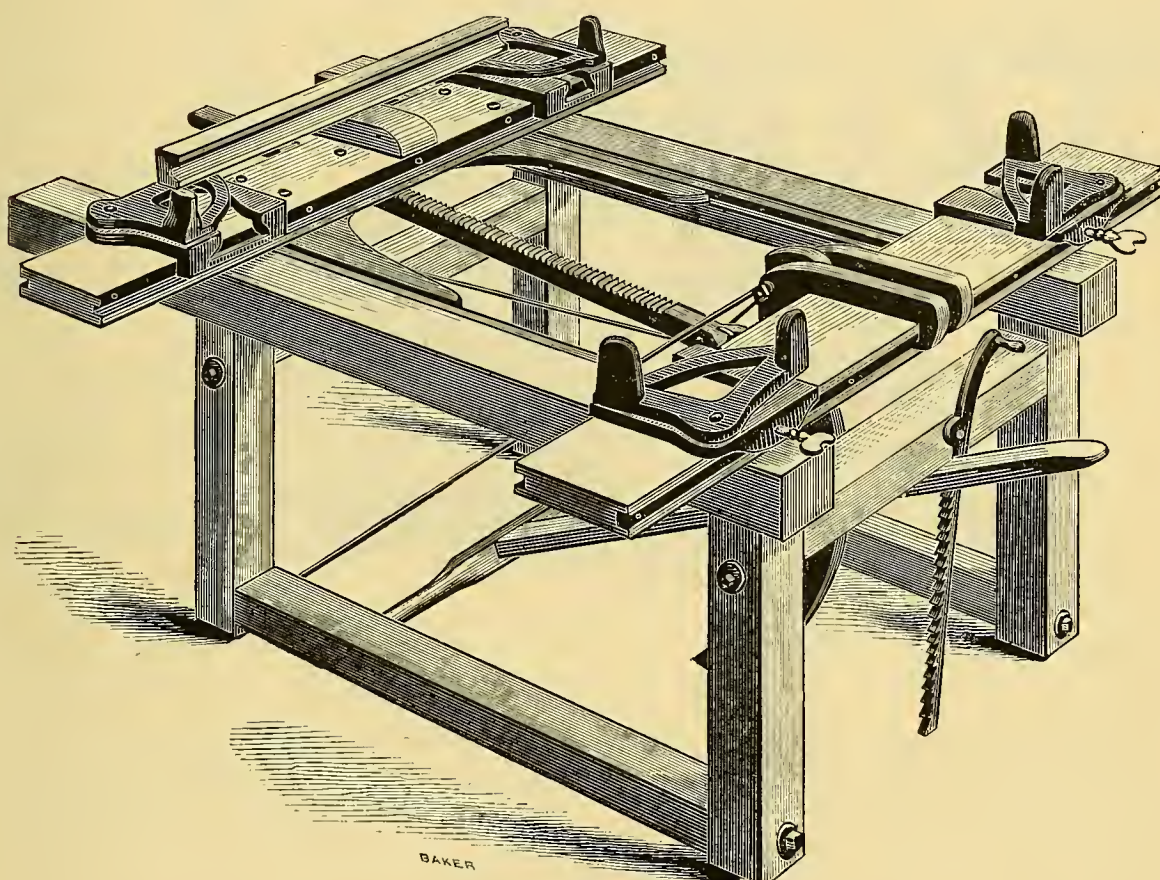
## Door and Blind Clamp.



The above cut represents one of the best and cheapest machines for the purposes designed, doing the work perfectly and rapidly, clamping doors on ends as well as sides. The cut explains the machine, working simply by pressing down three levers with the foot, and moving the eccentric by hand. The change from one size down to another is easily made by moving the back dog either backward or forward. Will clamp doors 10 feet long by 4 feet wide, down to the smallest size. Will clamp blinds and sash, but is only intended for long sash or odd sizes.



## Patent Sash Clamp.



This is one of the best and cheapest machines for the purpose in use, and by its use a great amount of labor is saved over other methods of clamping sash. It not only brings up every joint to its place, but makes the sash perfectly square, clamping the four sides all at one operation, the operator simply pressing the lever down with his foot. It clamps all sizes, from 7 by 9 glass, to 4 feet by 4½ feet sash, and brings the work square every time. Either pins or wedges can be used.

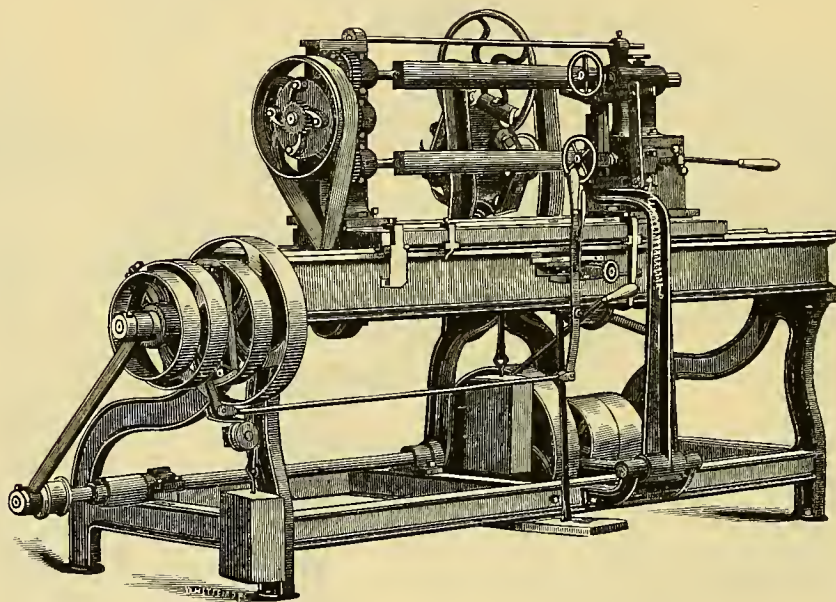
### Directions for Use.

In adjusting the corners, place them at equal distances from the center, on the front part of the machine, so that when the sash is pressed up the inner arm will be on a line with the bar. Then place the corners on the movable bar the same distance apart, and in such a manner as to bring the sash square, adjusting the connecting rods to give the necessary pressure.



# Gear's Illustrated Catalogue of

## Improved Lathe for Turning Irregular Forms.

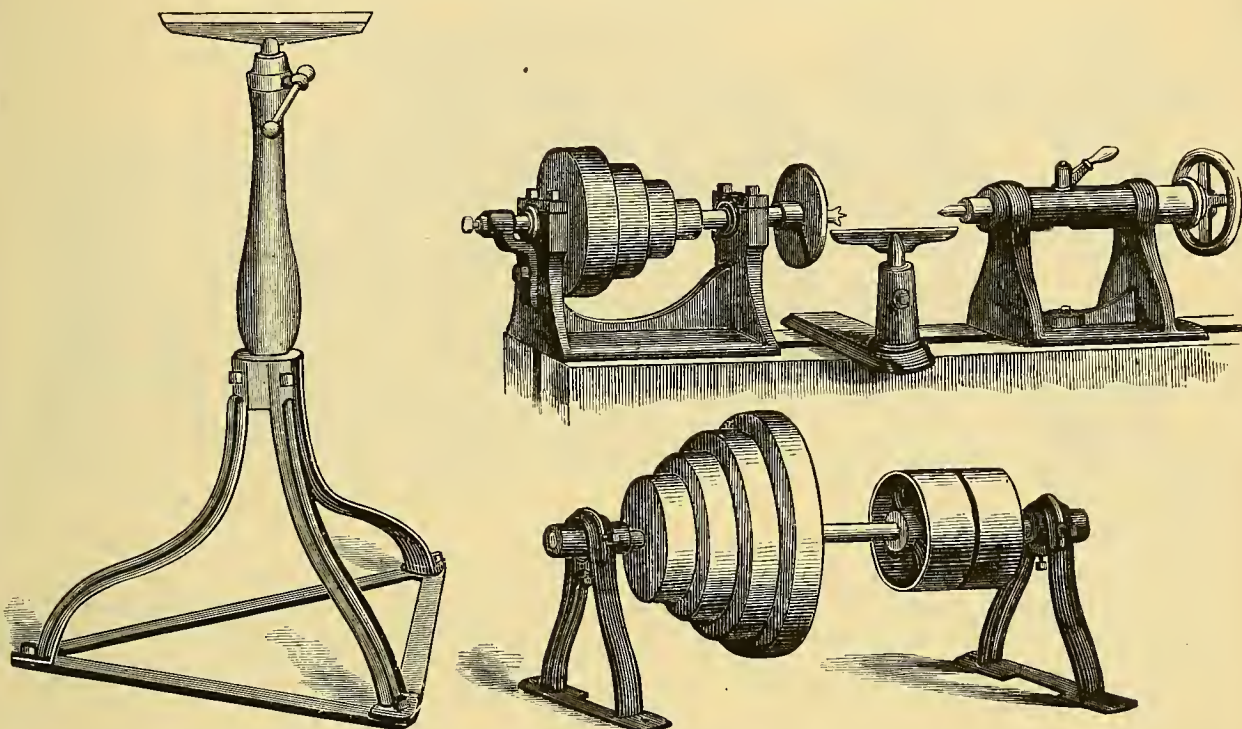


This machine has several useful improvements. It is constructed entirely of iron and steel, with journal boxes lined with anti-friction metal, and is very substantial and durable. It will turn all kinds of carriage spokes, axe, pick and hammer handles, and other irregular forms, and will turn different sizes from the same pattern, by simply adjusting the guide wheel boxes and the spoke supporters. Different grades of feed are obtained by the cone pulleys on the left. By means of these pulleys and the automatic shipping arrangement, a spoke is turned much faster until it approaches the square part, when the middle dog, on the front of the carriage, comes in contact with the trip lever on the front of the bed, then the shipper is relieved, and the weight at the left changes the clutch from the small cone to the large one, causing a slower speed the rest of the way. When the work being done will allow, it may be run throughout with the quickest speed, and when the form of the work requires, it may be run slow throughout. When the work is done, the dog on the left corner of the carriage, combined with other devices, throws the cutter head away from the work, making it safe for the operator to change the spoke. The same dog stops the carriage. To run the carriage back, the shipper handle at the bottom of the bed must be carried to the right, and when the carriage gets back, the dog on the right corner comes in contact with the shipper and stops the carriage. This machine has an improved support for the stock being turned. When the stock is in the machine, the cutter head is brought to the work by the foot lever in front, near the floor, and round handle in front of the bed. This must be drawn tight enough to produce the necessary pressure on the pattern. The carriage is started by carrying the upright shipper lever to the right, which is held in that position by the trip lever until the trip dog comes in contact with it, when the speed is changed as above described. This machine will turn large spokes at the rate of one inch per second, and very smooth. Small ones can be run much faster.



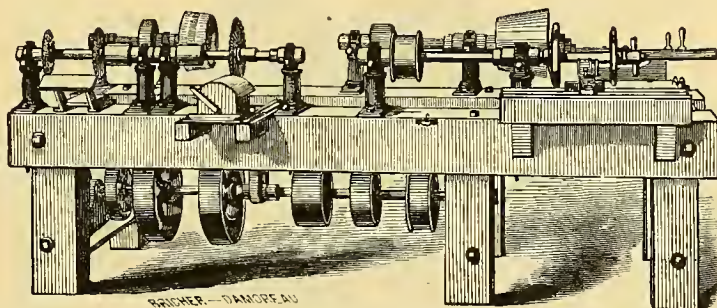
# Wood and Iron Working Machinery.

## Pattern Maker's Lathe.



The above cuts represent a Pattern Maker's Lathe, with reversed cone, to give ample room for the operator when turning near the center; also, a Floor Rest, which can be readily adjusted to the work required. They are fitted up with great care and precision. Lathes are generally called for, and prices are given, without ways or shears. These can be furnished to order either of wood or iron. Each lathe consists of head and tail stock, with rest, stand, counter shaft, cone and hangers complete. The Pattern Maker's Lathe will be furnished with a rear end face plate, for turning large diameters. It has a common face plate, one back, one long, medium and short rest, and one pair each of screw, spur, female and round centres.

## Pail Lathe.

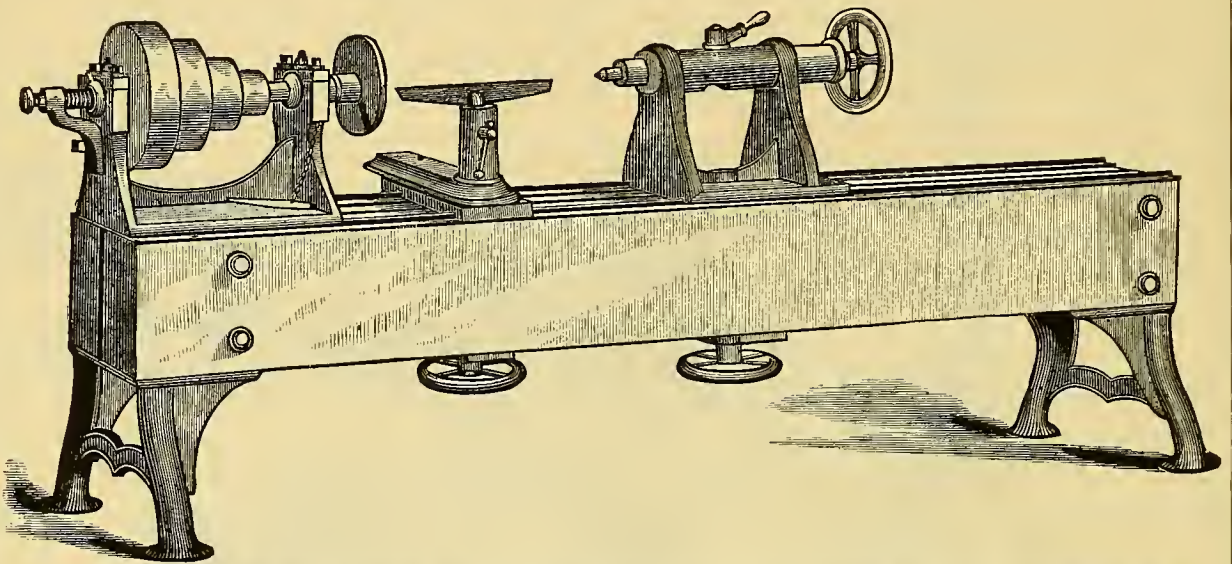


These lathes are all made with pivot boxes, iron pulleys, cast steel saw arbors, and improved inside turning carriage. Each machine is furnished with a full set of saws and chisels all ready for use. There are other sizes made for kit lathes; also, for tubs of all sizes.



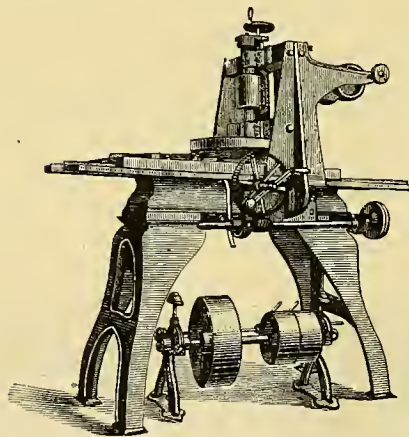
# Gear's Illustrated Catalogue of

## Common Wood Turning Lathe.



These lathes have cast steel spindles, two face-plates, three rests, a spur, female and round centres, the necessary bolts for head-blocks, and rest-holder. The counter shaft has improved hangers, patent self-oiling boxes and cone pulleys. The tight and loose pulleys vary according to the size of the machine. The ways or beams are furnished at an extra charge, according to their size and length. There are seven sizes of this machine, viz.: 10, 12, 14, 16, 18, 20 and 24 inch swing lathe, with counter shaft, etc., complete.

## Wood Planers for Electrotypers.

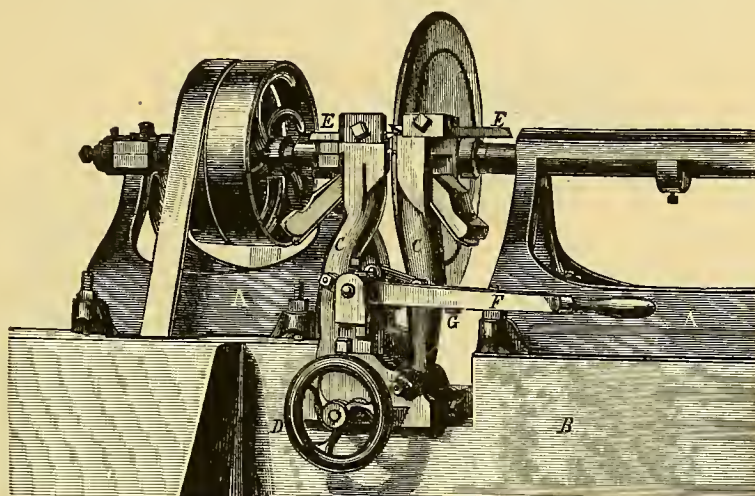


This machine is designed for dressing wood for mounting Electrotypers' and Stereotypers' plates. The machine is all metal and is very substantially made, and has both hand and power feed. The spindle and cutter head is similar to the Daniels planer in its operation. The head that carries the cutters is a round flanged disc, and operates without noise or blowing. The spindle has a collar and step on the top end to prevent friction and grinding, as is the case in fast running spindles that have shoulders on both the upper and lower boxes. The sliding table is double; the lower one has guides planed to fit the bed, and the top one takes the spur jaws that hold the work. The two are held together with dowel screws, and can be leveled perfectly by liners between the bed-plates. In setting up this machine care should be taken to have an equal bearing on all the feet; also, to see that the table bears equally solid on all the four corners, which can be easily determined by blows with a wooden mallet over the bearing parts. When found correct, secure the feet firmly to the floor. It is important to have cutters that are to be used together each of exactly the same weight as its mate.



# Wood and Iron Working Machinery.

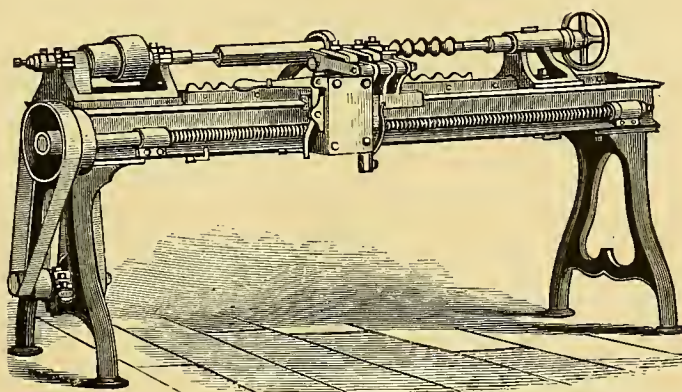
## Improved Turning Lathe,



### For Turning Heads of Casks, Kegs, Bottoms of Tubs, Pails, &c.

The following is a description of the machine above represented, and its operation. There are two heads or stocks, A, similar to those of an ordinary lathe, mounted upon shears, or a frame, B, one spindle—the live one,—having a fast and loose pulley, and the other—the dead spindle,—sliding back and forth by means of a screw and hand-wheel (not shown in the cut) in the ordinary manner. To the live spindle is secured a circular flange or head, which rotates with the spindle. There is a duplicate head attached to the dead spindle, but turning upon it as a wheel upon its axle. To hold securely the stuff placed between them, their inner faces are provided with spurs. Secured to the bed of the lathe is a stand which supports two uprights, C, which are pivoted to a table, the lower part or base of which slides by a dovetailed slot in the stand, and can with its appurtenances be moved in or out by means of a screw and hand-wheel, D, in the same manner as the carriage on a lathe. Thus the apparatus can be adapted to the different sizes of work to be done. The uprights are pivoted at their lower ends to suitable stands on the table or carriage, and the other ends adapted for the reception of turning tools, E, held horizontally in place by means of set screws, as the tools of a turning lathe are held. Just below them, and set at an angle to chamfer the edge of the head properly, are two plane irons, secured in the usual manner. These cutters and planes are advanced to or recede from the work by a hand lever, F, and suitable links, shown plainly in the cut. The limit of their approach is determined by a set-screw, the head of which is seen under the lever at G, passing through one of the uprights and setting against the other.

## Furniture, or Gauge Lathe.

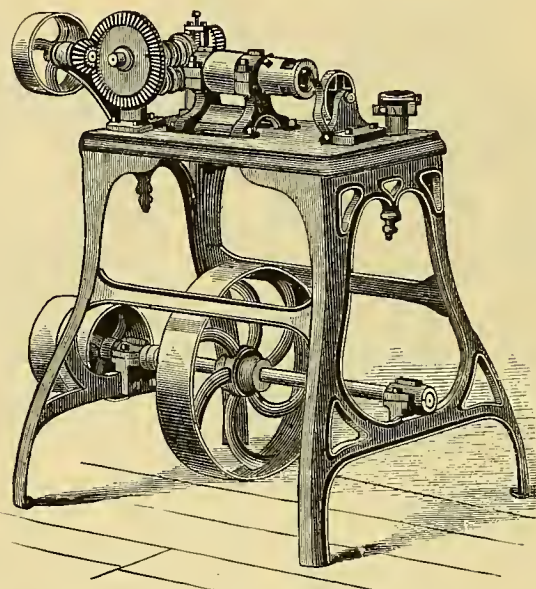


In ordering the lathe represented above, customers should be careful to describe the kind and style of work to be performed, for what would be the best for some, would be useless for others. The Gauge Lathe, with screw feed, like the above cut, is in very general use for chair stock, bedstead rolls, balusters, and various kinds of handles, cabinet and knarled work.

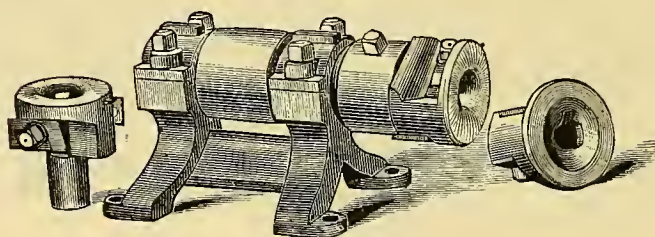


# Gear's Illustrated Catalogue of

## Patent Rod, Pin and Dowel Machines.



Power Feed.



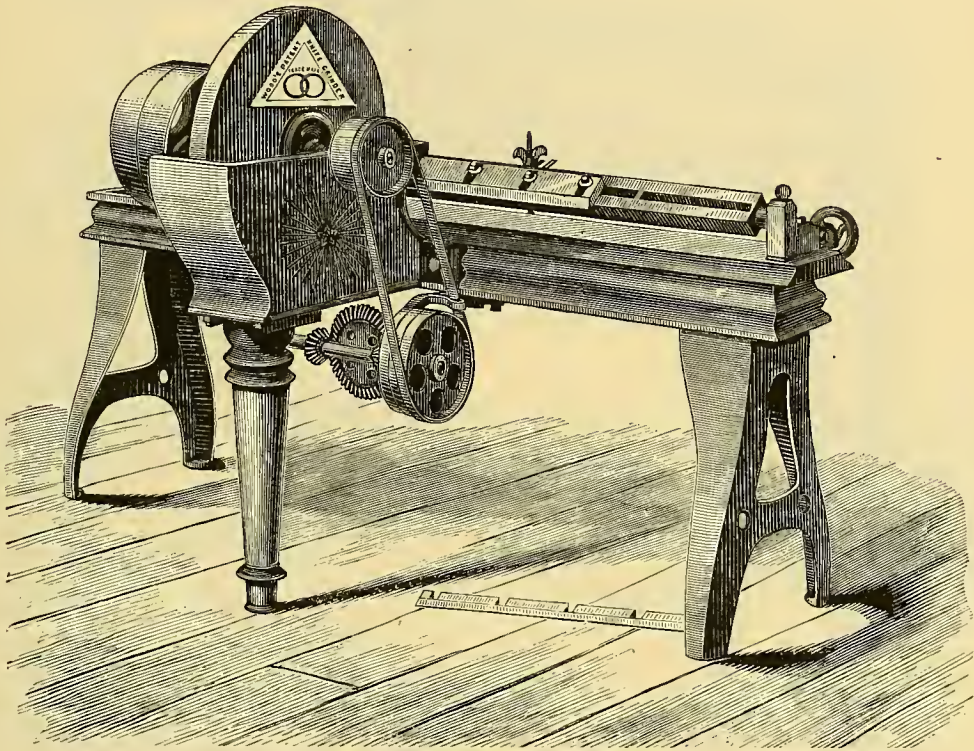
Hand Feed.

These machines are all self-feeding, the cutters being arranged in the heads in such a manner as to feed the stick as fast as it can be worked, without any pushing by the operator. It will turn rods from  $\frac{1}{4}$  to 3 inches in diameter, perfectly smooth and true, either of pine or hard wood. The working part of the machine has a hollow arbor, with head and cutters revolving around the rod. The working parts are the same for the hand and power machines, but the latter has a neat iron frame and table to support the arbor, with a set of rolls to take the rods out of the way after they leave the head, and also to hold them firmly in place while working, thus leaving the operator free to start the sticks and take care of them when finished. The rolls have grooves in them to fit the size of the rod, and hold it firmly, without denting or defacing it. The power machine also has a counter-shaft attached to the frame for running it. We send with the Power Machine any three heads that may be desired; also, rolls with three sizes of grooves, and with the hand machines the sizes given below, unless otherwise ordered. Each Hand Machine will work the largest size named for it, and all sizes smaller, but none larger. The No. 1 Power Feed Rod Machine, will work 2 inches, or under, and has three heads; No. 2 will work  $1\frac{1}{2}$  inches, or under, and also has three heads. The No. 1 Hand Feed Rod Power Machine will work  $\frac{3}{4}$ ,  $\frac{1}{2}$  and  $\frac{5}{8}$  inch, or under, and has three heads; No. 2 will work  $\frac{3}{4}$ ,  $\frac{7}{8}$  and 1 inch, or under, and also has three heads; No. 3 has three heads, and will work  $1\frac{1}{2}$ ,  $1\frac{1}{4}$  and  $1\frac{3}{4}$  inch, or under; No. 4 has three heads, and will work  $1\frac{1}{2}$ ,  $1\frac{1}{4}$  and  $1\frac{3}{4}$  inch, or under; No. 5 also has three heads, and will work  $1\frac{1}{2}$ ,  $1\frac{1}{4}$  and 2 inches, or under. The counter-shaft on the Power Machine has tight and loose pulleys  $8\frac{1}{2}$  inches in diameter,  $3\frac{1}{2}$  inch face, and should make 750 revolutions, giving the heads 3,000. Weight, boxed, 460 pounds.



# Wood and Iron Working Machinery.

## Patent Automatic Knife-Grinder,



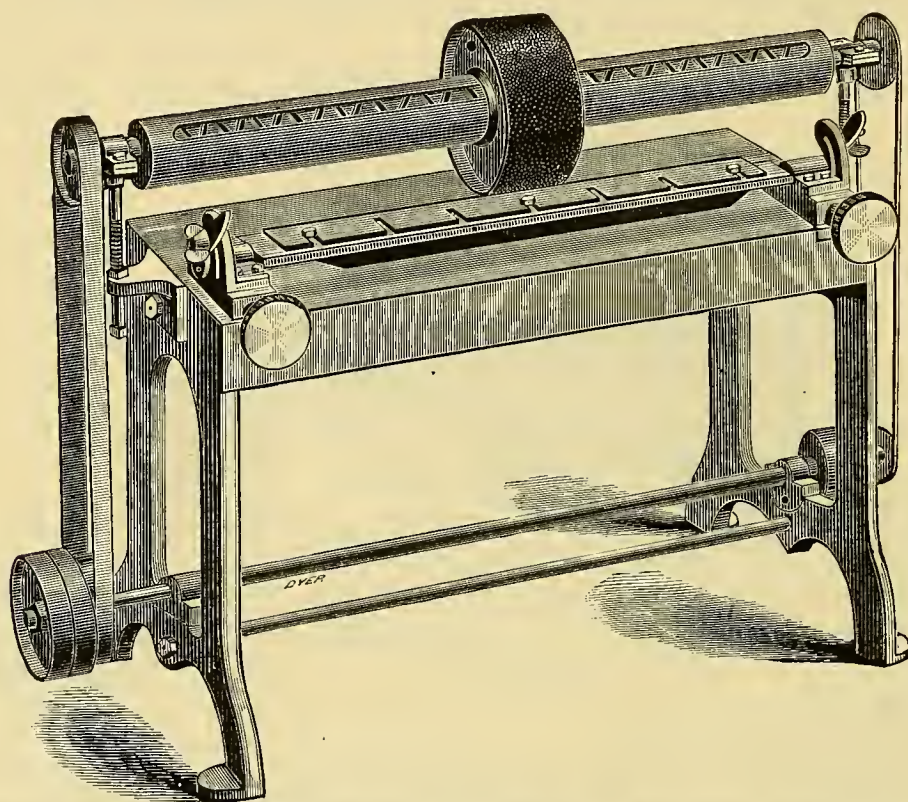
For Sharpening Planer, Tobacco, Paper Cutting and other Knives.

This machine is admirably adapted to sharpening planing-machine and other long knives with chisel edges. The grinding is done dry with this grinder-wheel. It has been in use for some time with complete success, grinding the long splitting knives used by carriers without heating or drawing the temper, and giving a perfectly true bevel and straight edge. The machine requires very little attention. The knife is ground, after it is placed in proper position, entirely by the action of the machine, with greater accuracy and better than it is possible to do with a grindstone or by hand, and in much less time. The principle of the feed-gear is the same as that used on metal planers, and by means of adjustable pins, the carriage can be made to traverse and return in from three to thirty-six inches, according to the length of the knife being ground. It is a very simple machine and in no way liable to get out of order, and the accuracy with which it does its work must commend it to the most critical mechanic. The grinding-wheel is solid, and will last for years in an ordinary planing-mill, without covering, sprinkling or renewal of any kind whatever. The machine is equally adapted to grinding paper and tobacco cutting knives, and shears or knives generally requiring a true bevel or straight edge, to thirty-six inches in length. Two or more knives, making in length not over thirty-six inches, can be ground at the same time. In this way a number of plane irons, chisels, etc., can be attached, and all ground at once, making an important saving in time. No counter-shaft is necessary. The machine has a tight and loose pulley, six inches in diameter, and three inch face, which should be driven from one hundred and seventy-five to two hundred and fifty revolutions per minute. There are three sizes of this machine, viz.: One grinding thirty-six inches, another fifty inches, and another eighty inches in length. The small machine stands on a pedestal, which is bolted to the floor.



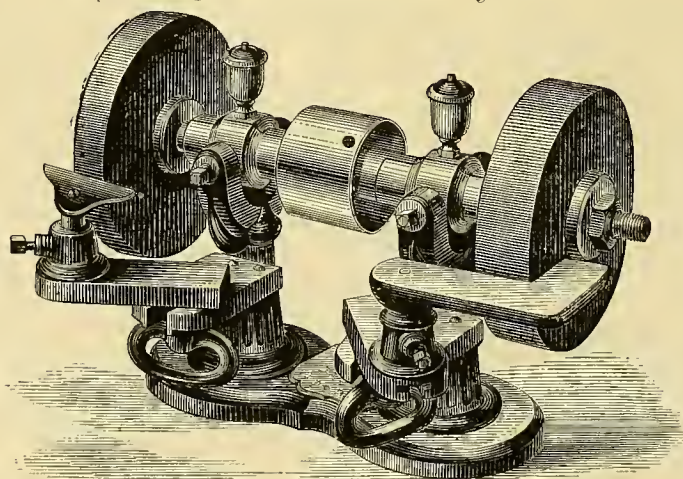
# Gear's Illustrated Catalogue of

## Planer Knife and Tool Grinder.



The above machine should be belted as the pulleys are arranged. The belts are all open,—that is, they are all driven one way. As you stand in front of the machine the grinder runs toward you, or from the edge. The speed recommended to run the grinder is about 750 turns per minute. The knife, when bolted on to the rest, should be set just as you wish the scarf or bevel to be, then feed up very lightly by the adjusting screws. You will find that it will then grind very fast and leave a concave bevel and a perfectly straight and sharp edge.

## Emery Grinder No. 0.



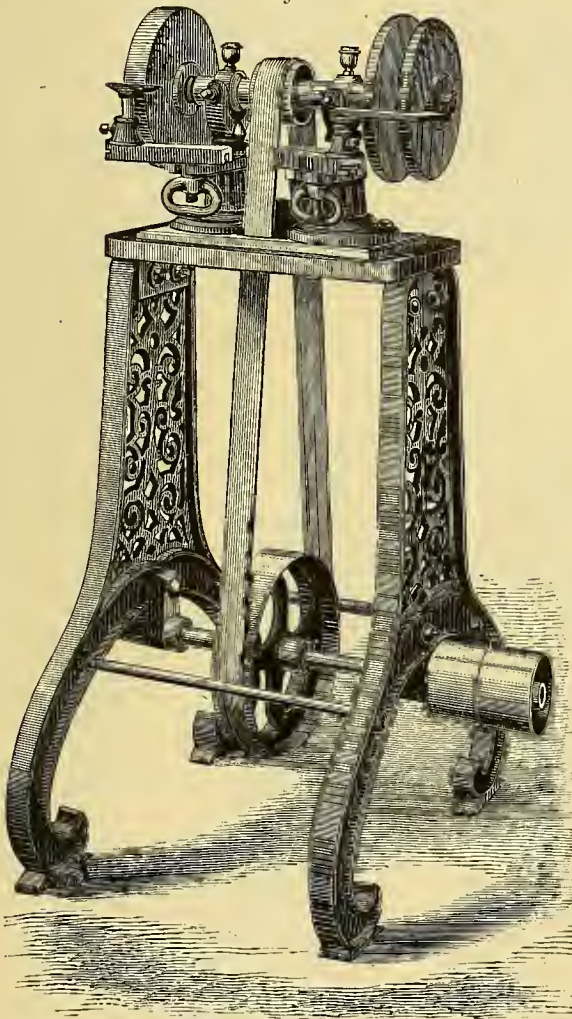
This Grinder has a  $1\frac{1}{2}$  inch steel mandrel, for wheels with  $\frac{3}{4}$  inch mandrel hole. It will run two wheels at the same time, from 8 to 10 inches in diameter,  $\frac{1}{4}$  to  $2\frac{1}{2}$  inch face. The No. 1 Grinder is made in the same style as the No. 0, for wheels with 1 inch mandrel hole.



# Wood and Iron Working Machinery.

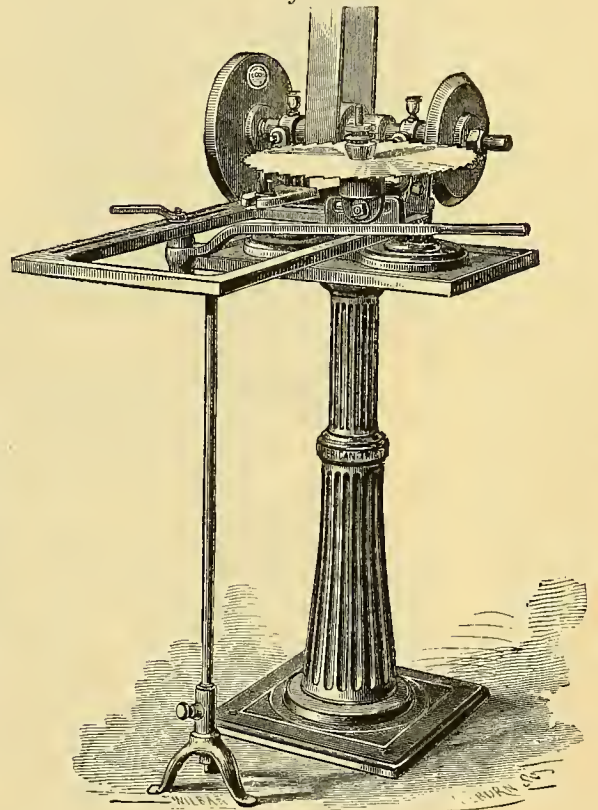
## Emery Grinders.

Fig. 1.



New Style Frame for Nos. 0 and 1 Emery Grinders.

Fig. 2.

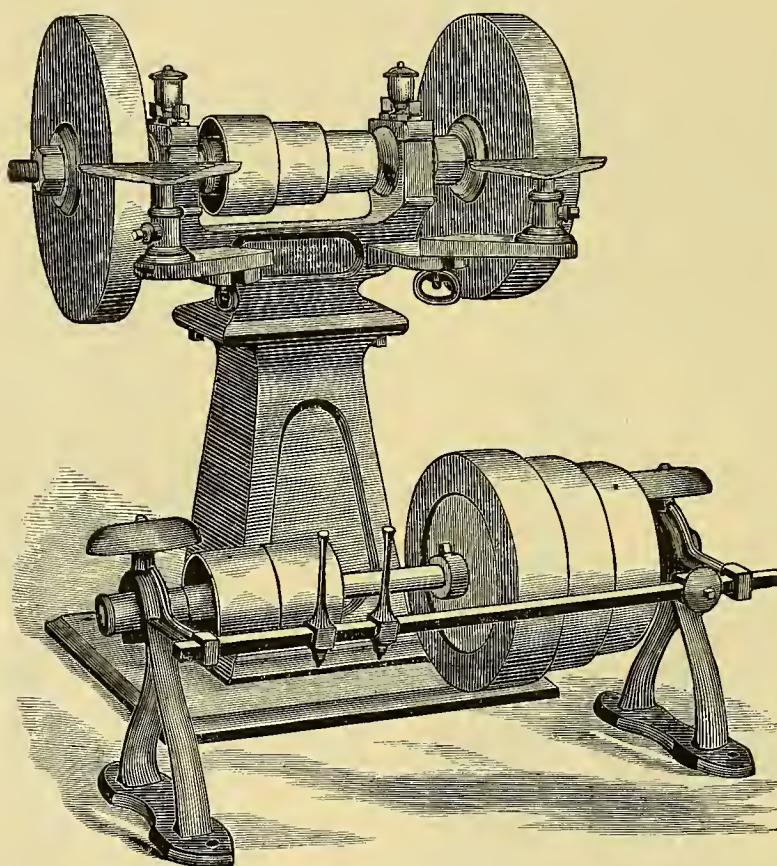


No. 1 Emery Grinder, with Saw Gummer Attachment.

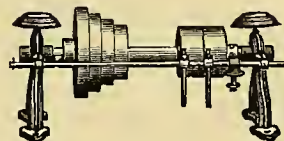
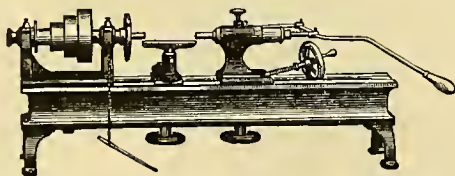
Figure 1 represents a new style frame for No. 0 and 1 Emery Grinders, with counter-shaft and pulleys all complete. Figure 2 represents a Grinder with an attachment for grinding the teeth of circular saws, from the smallest to four feet in diameter, true and uniform. The saving of time and files will in a short time pay for the machine for sharpening saws alone, while it can be used for grinding tools, polishing metals, and a variety of work that otherwise would have to be done with a lathe, planer, or a vise.



## Emery Grinder No. 3.



This grinder has a one and five-eighths steel mandrel (for wheels with one and one-half mandrel hole), and will run wheels to thirty-six inches diameter, and is designed for heavy work.

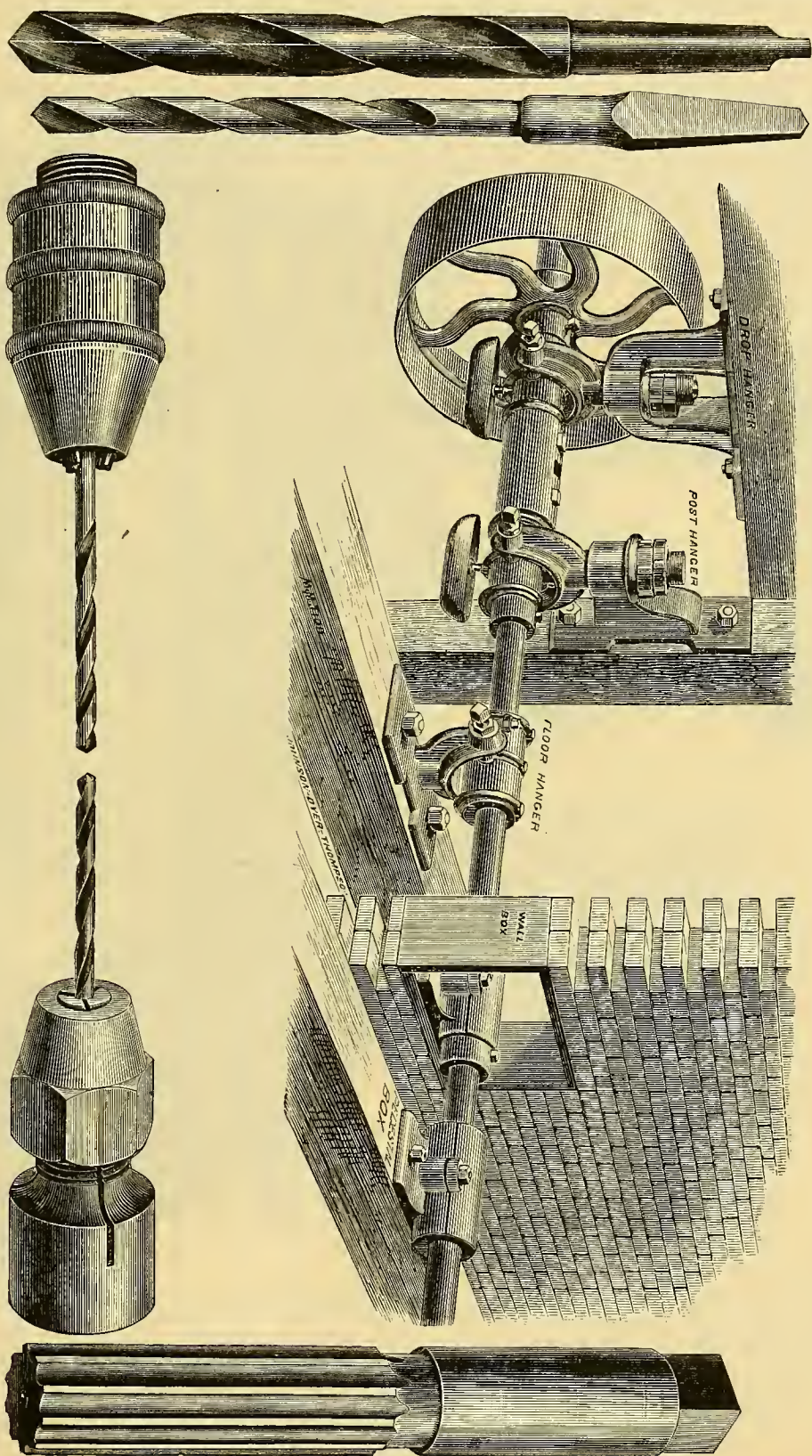


These cuts represent a bench lathe, with a counter shaft, three foot bed and nine inch swing, with a lever for light drilling, &c.



# Wood and Iron Working Machinery.

Shafting, Hangers and Pulleys.

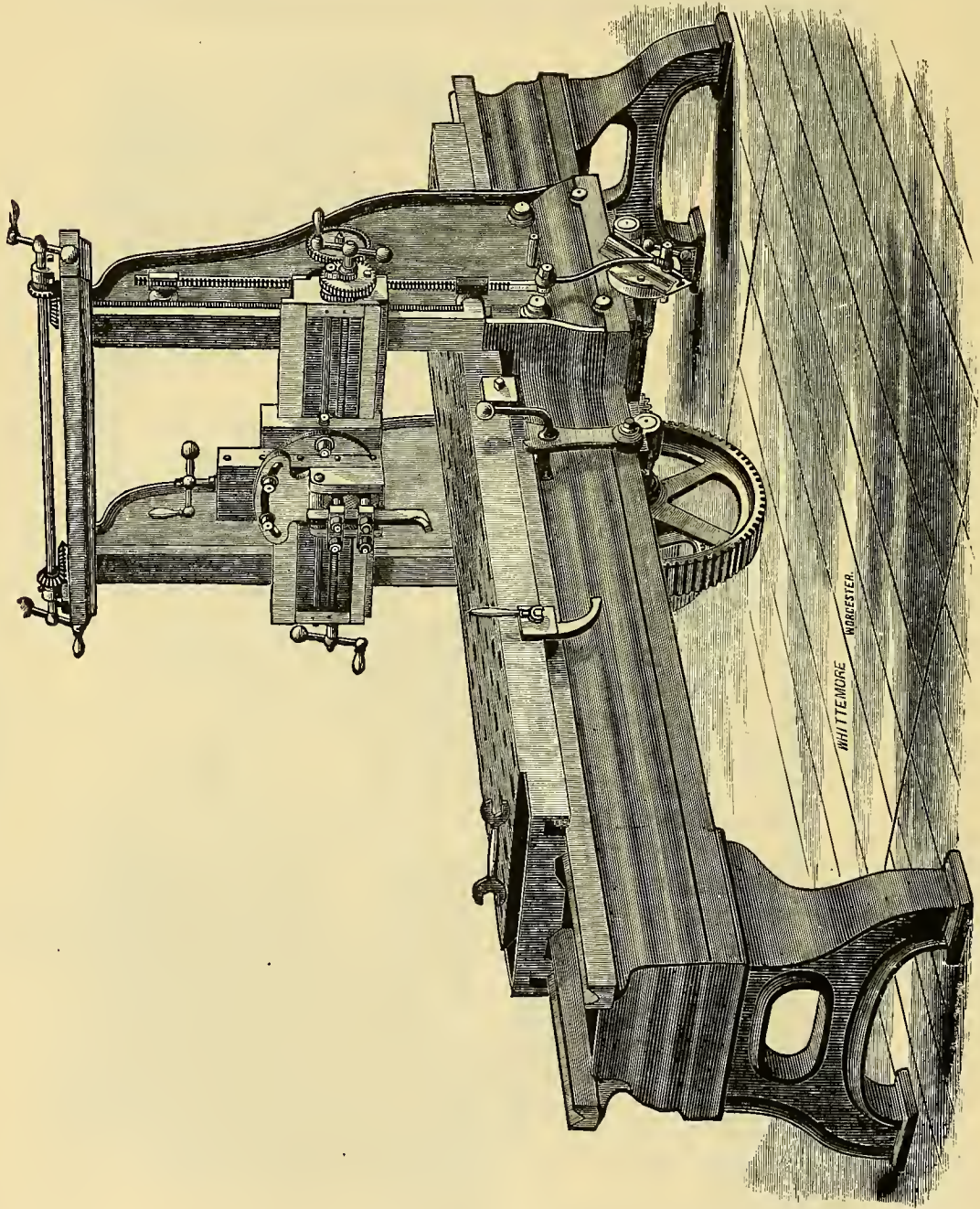


Chucks, Drills and Reamer.



# Gear's Illustrated Catalogue of

Large Iron Planer.



WHITTENDRE  
WORCESTER.



# Wood & Iron Working Machinery.

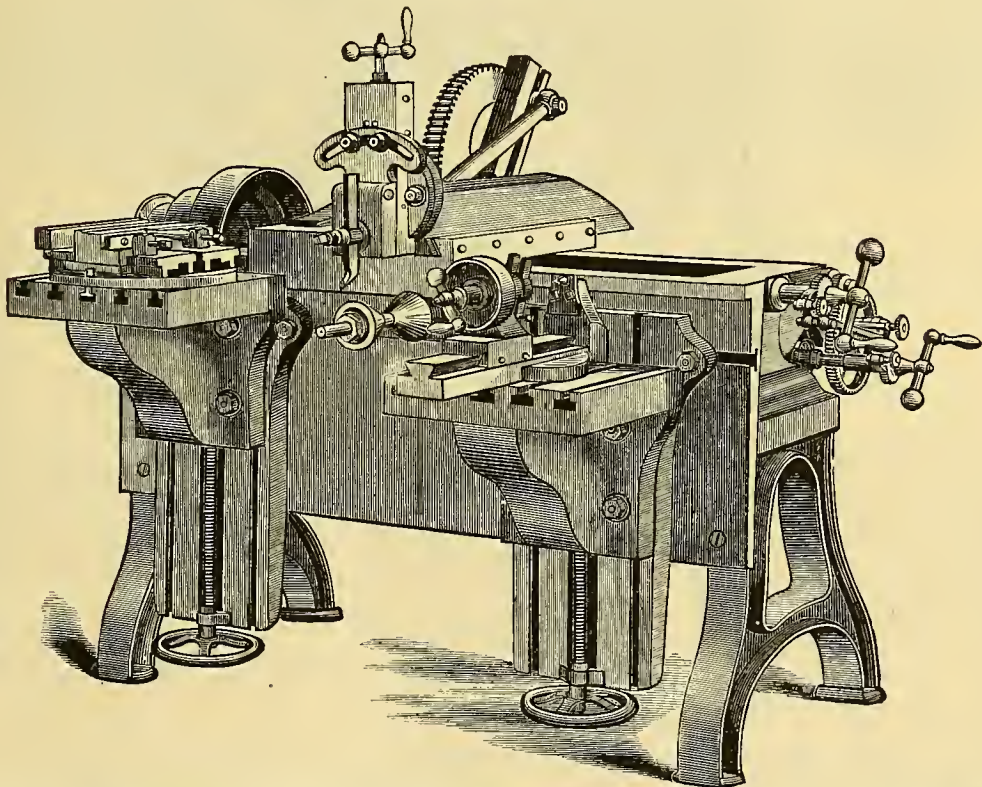
## Large Iron Planer.

SEE ILLUSTRATION ON PAGE 86.

The cut on page 86 represents an iron planer which will plane 26 inches wide, 24 inches high, and 6 feet long. It also represents the style of the larger sizes. These planers are made from new patterns, extra heavy, and especial care has been observed so to proportion the parts as to secure the greatest strength of metal and durability of the machine. All are furnished with down, cross and angular feed in the head, and if desired can be furnished with an attachment for feeding the cross beam down. The thirty-six inch and larger sizes are furnished with an improved power attachment for raising and lowering the cross beam. All the gears and racks are cut. All the handles and balances are made of wrought iron. All sizes are furnished with wrenches, counter-shaft, with patent self-lubricating pulleys and boxes. The following are the different sizes and dimensions:

Planes 5 ft. long, 22 in. wide, 21 in. high, weight 3000 lbs.					Planes 18 ft. long, 36 in. wide, 36 in. high, weight 17500 lbs.				
" 6 "	26	" 28	"	" 5000 "	" 20 "	36	" 36	"	" 18600 "
" 8 "	26	" 28	"	" 5500 "	" 16 "	42	" 42	"	" 19400 "
" 8 "	32	" 30	"	" 8150 "	" 20 "	42	" 42	"	" 22200 "
" 10 "	32	" 30	"	" 9000 "	" 24 "	42	" 42	"	" 25000 "
" 12 "	32	" 32	"	" 9850 "	" 16 "	48	" 46	"	" 21000 "
" 12 "	36	" 36	"	" 14200 "	" 20 "	50	" 48	"	" 28400 "
" 14 "	36	" 36	"	" 15300 "	" 24 "	50	" 48	"	" 32500 "
" 16 "	36	" 36	"	" 16400 "	" 20 "	60	" 60	"	" 38500 "

## Shaping Machine.

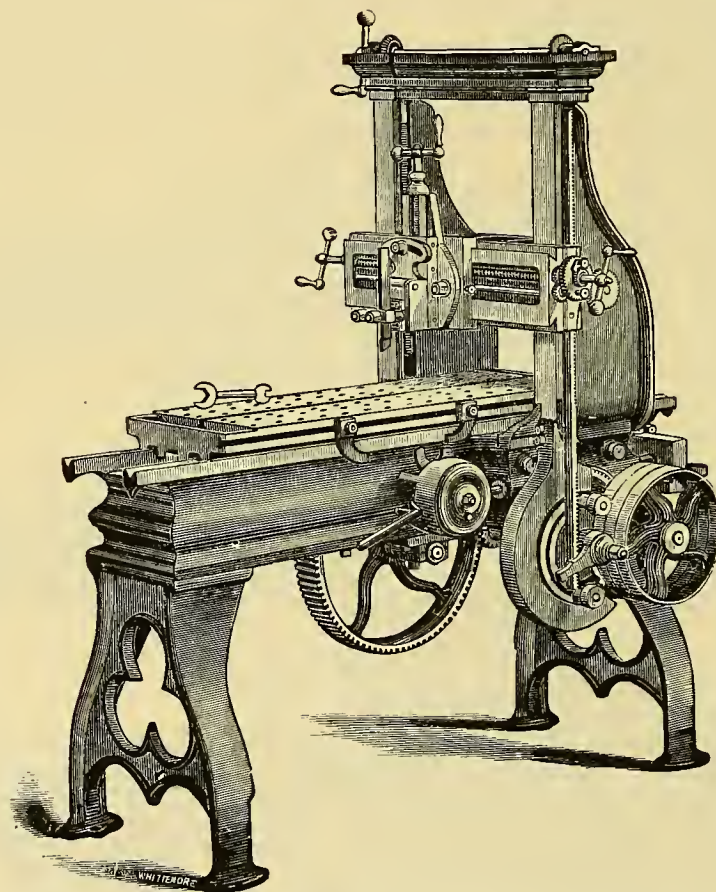


The above cut represents a No. 3 Shaping Machine. It gives a stroke from zero to 16 inches, with a quick return motion, thereby gaining full one-third over ordinary crank motion. It will plane 3½ feet long, has two adjustable tables 16 inches square, one forming an angle-iron, 16 by 15 inches, circular mandrel, with independent feed. The circular mandrel can be almost instantly attached to or detached from the machine. It is made from new and improved patterns, very heavy, and well finished. It will do at least one-third more work than a common planer, is more convenient, and is well adapted to locomotive and other heavy work. All sizes are furnished with chuck, centres, wrenches and counter-shaft, with patent self-lubricating pulleys and boxes. Beds can be made to plane longer if desired. There are three sizes built, 8, 12 and 16 inches stroke.



# Gear's Illustrated Catalogue of

## Iron Planers.



The above cut represents a planer with a bed 5 feet in length, which will plane 3 feet long, 18 inches wide and 18 inches high. There are eighteen different sizes of this machine, the dimensions of which are as follows:

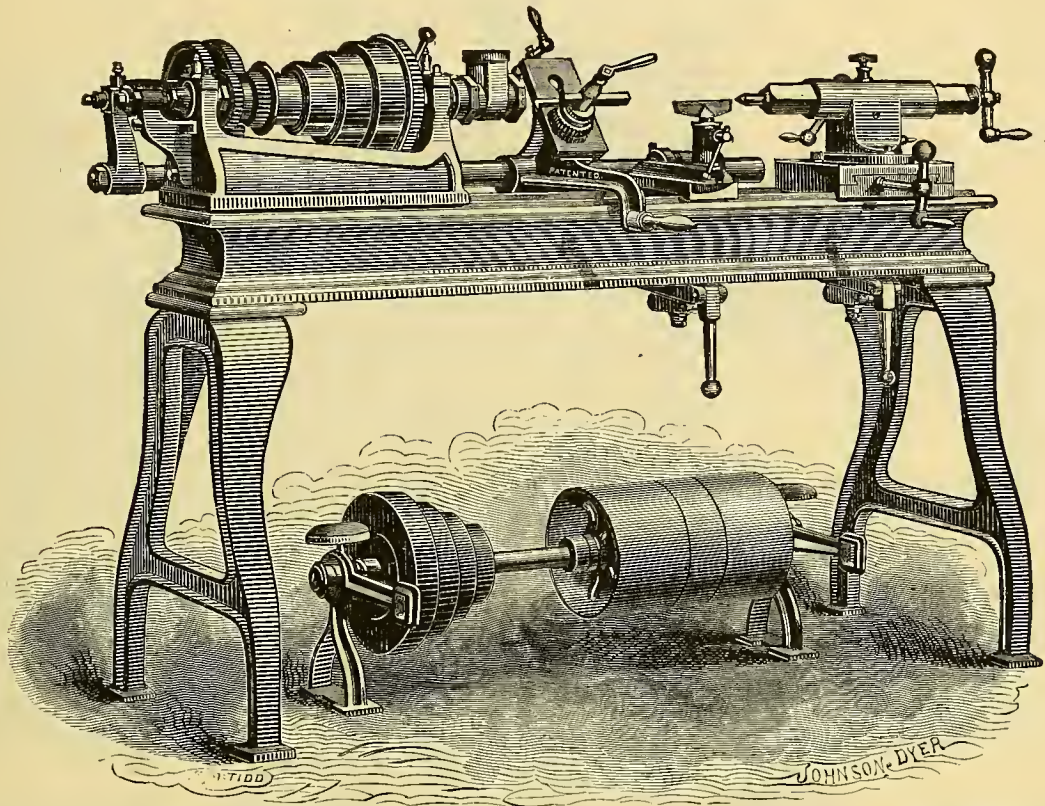
Length of bed (ft. & in)	5	6-8	8-4	8-4	10	11-6	10	12-8	16	12-8	16	18	21	24	30	24	30	36
To plane in length (ft.)	3	4	5	5	6	7	6	8	10	8	10	12	14	16	20	16	20	24
To plane in width (in)	18	22	22	26	26	26	30	30	30	36	36	36	36	36	36	42	42	42
To plane in height (in)	18	22	22	26	26	26	30	30	30	36	36	36	36	36	36	42	42	42
Weight (pounds),	1600	2600	2900	5000	5400	5800	6500	7100	7700	13000	13800	14600	15400	16200	17800	20000	23000	26000

All these planers are furnished with vertical, cross and angular feed. The gears and racks are cut. They have wrenches, counter-shafts and pulleys, and also have patent adjustable self-lubricating boxes if ordered. The holes in the table are drilled and reamed. We can recommend these planers as being first class in every respect.



# Wood & Iron Working Machinery.

## Brass Finisher's Lathe.



The above cut represents the No. 1 Square Arbor Lathe, with back gears, patent screw-chasing apparatus, and reverse counter-shaft; also, with dovetail set over, swivel and back motions to tail stock. This lathe is used for brass work of all descriptions, and for that purpose has no rival.

### Lathes.

No. 1 Turret Lathe, six feet bed, swings eighteen inches, with engine feed, back gears, screw apparatus and overhead works.

No. 2 Turret Lathe, six feet bed, swings sixteen inches, with back gears, screw apparatus and overhead works.

No. 1 Square Arbor Lathe, five feet bed, swings fifteen inches, with dovetail set over, swivel and back motions, back gears, screw apparatus and overhead works.

No. 1 Round Arbor Lathe, five feet bed, swings fifteen inches, with dovetail set over, swivel and back motions, back gears, screw apparatus and overhead works.

Hardened Spindle and Boxes, for No. 1 Lathe, extra. Hobbs, for cutting threads, including cutter and leader, extra. Back Gears, Screw Apparatus, if not wanted, will be deducted from the bill.

No. 2 Lathe, five feet bed, swings thirteen inches, with dovetail set over, and back motion, with overhead works.

No. 2 Lathe, five feet bed, swings thirteen inches, with dovetail set over and overhead works.

No. 2 Lathe, five feet bed, swings thirteen inches, with back motion and overhead works.

No. 2 Lathe, five feet bed, swings thirteen inches, with plain tail stock and overhead works.

Hardened Spindle and Boxes for No. 2 Lathe, extra.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, with dovetail set over and back motions, with overhead works.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, dovetail set over and overhead works.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, back motion and overhead works.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, plain tail stock and overhead works.

No. 4 Lathe, three and one-half feet bed, swings ten inches, with plain tail stock and overhead works (short legs).

No. 4 Lathe, three and one-half feet bed, swings ten inches, plain tail stock, with table and foot-motion.

No. 5 Lathe (formerly No. 4), three feet bed, swings nine inches, with plain tail stock and overhead works.

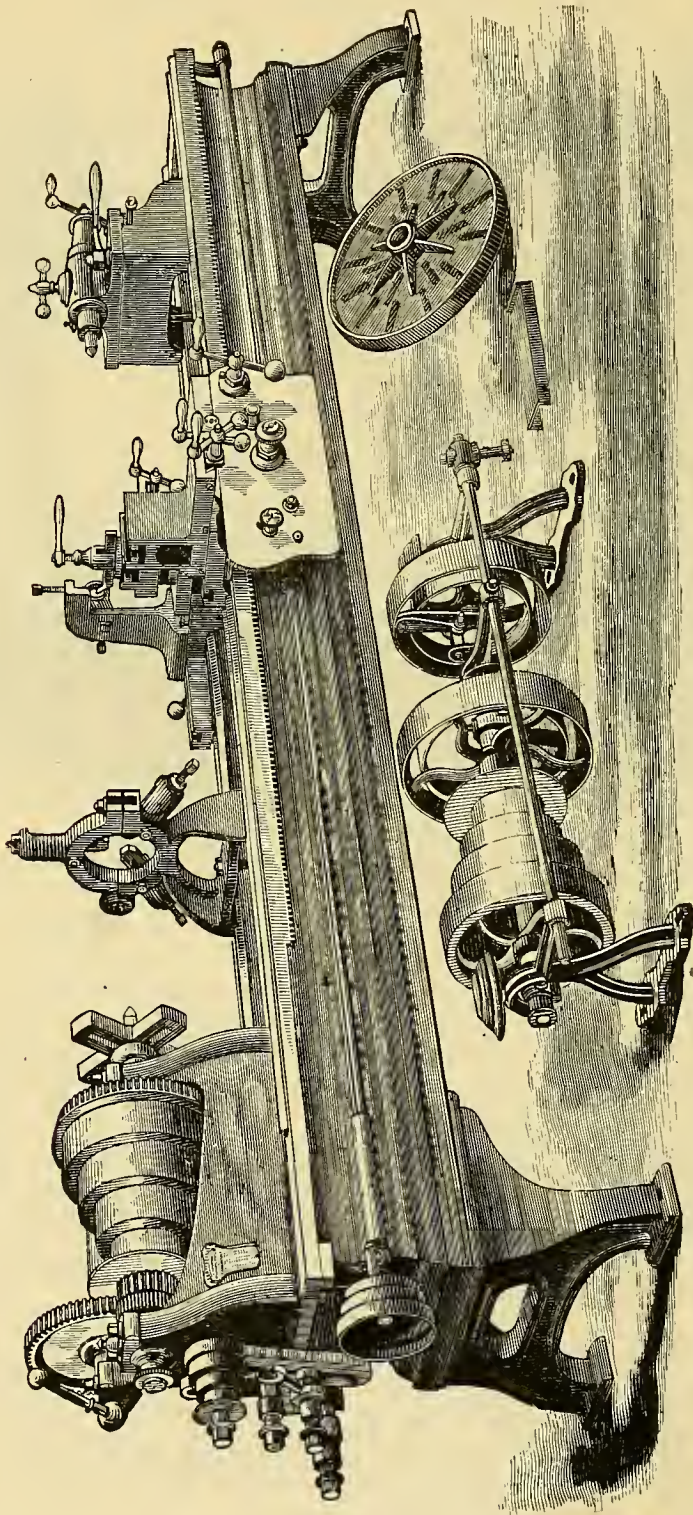
No. 5 Lathe, three feet bed, swings nine inches, plain tail stock, with table and foot-motion.

### Slide and Ball Rests.

No. 0 fits No. 2 Turret Lathe; No. 1 fits No. 1 Turret Lathe; No. 2 fits No. 2 and No. 3 Lathe; No. 3 fits No. 4 Lathe; No. 4 fits No. 5 Lathe.



## Engine Lathe.

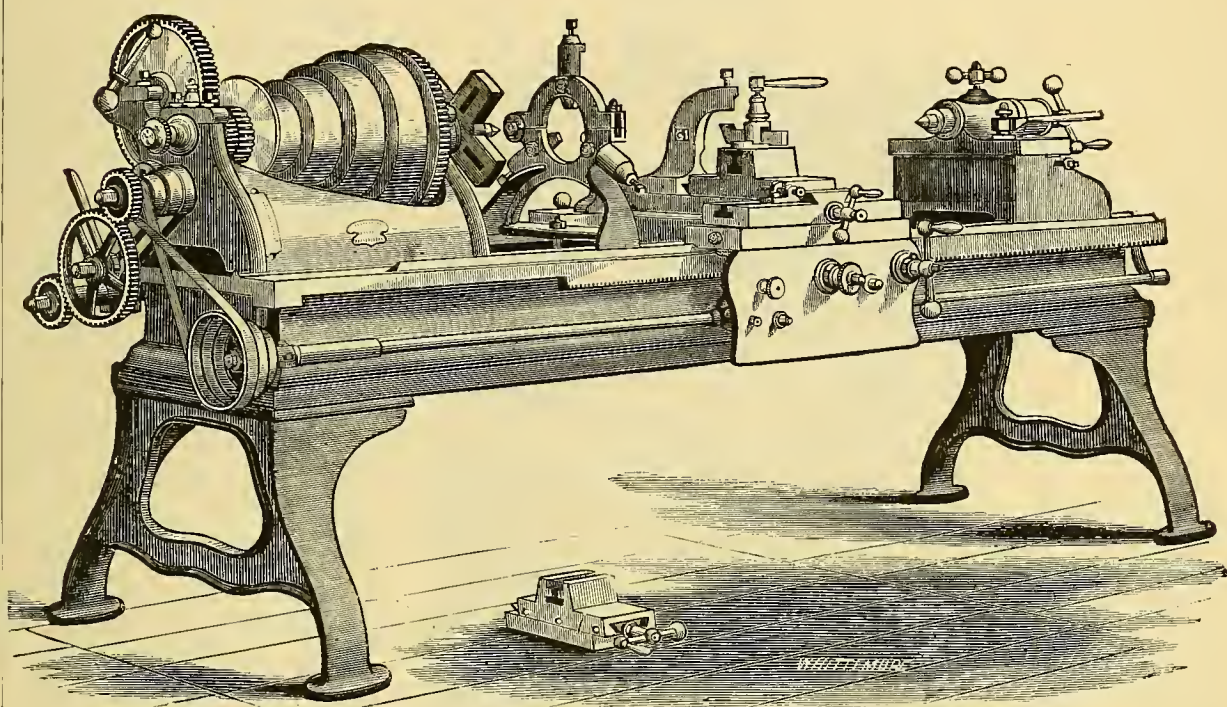


The above cut represents an Engine Lathe twenty-five inches swing, fourteen feet bed, geared head, screw cutting independent of feed works, with an eccentric nut. It has a patent friction and inside power cross feed, and a compound rest, extra side block for turning pulleys, &c. It also has an extra large face-plate, stationary and traverse rests, steel spindles, composition boxes, wrought iron handles and balances. The wrought iron work is case-hardened. These Engine Lathes are furnished with wrought iron racks, counter-shaft, with patent self-oiling friction clutch pulleys and boxes. It will turn ten feet in length and weighs 4,650 pounds. For dimensions of different sizes of Engine Lathes, see Table on page 91.



# Wood and Iron Working Machinery.

## Engine Lathe.



The above cut represents an Engine Lathe twenty inches swing, ten feet bed, geared head, screw cutting independent of feed works, with an eccentric nut, a patent friction and inside power cross feed which can be used at the same time. The point of the tool is elevated by the back screw on the carriage. It has also an extra side block for turning pulleys, &c., a large face-plate, stationary and traverse rests, steel spindles, composition boxes, wrought iron handles and balances. The wrought iron work is case-hardened. All these Engine Lathes are furnished with wrought iron racks, counter-shaft, with patent self-oiling friction clutch, pulleys and boxes. The lathe above represented will turn 6 feet 6 inches in length and weighs 2,500 pounds. The following Table gives the various sizes and dimensions of these

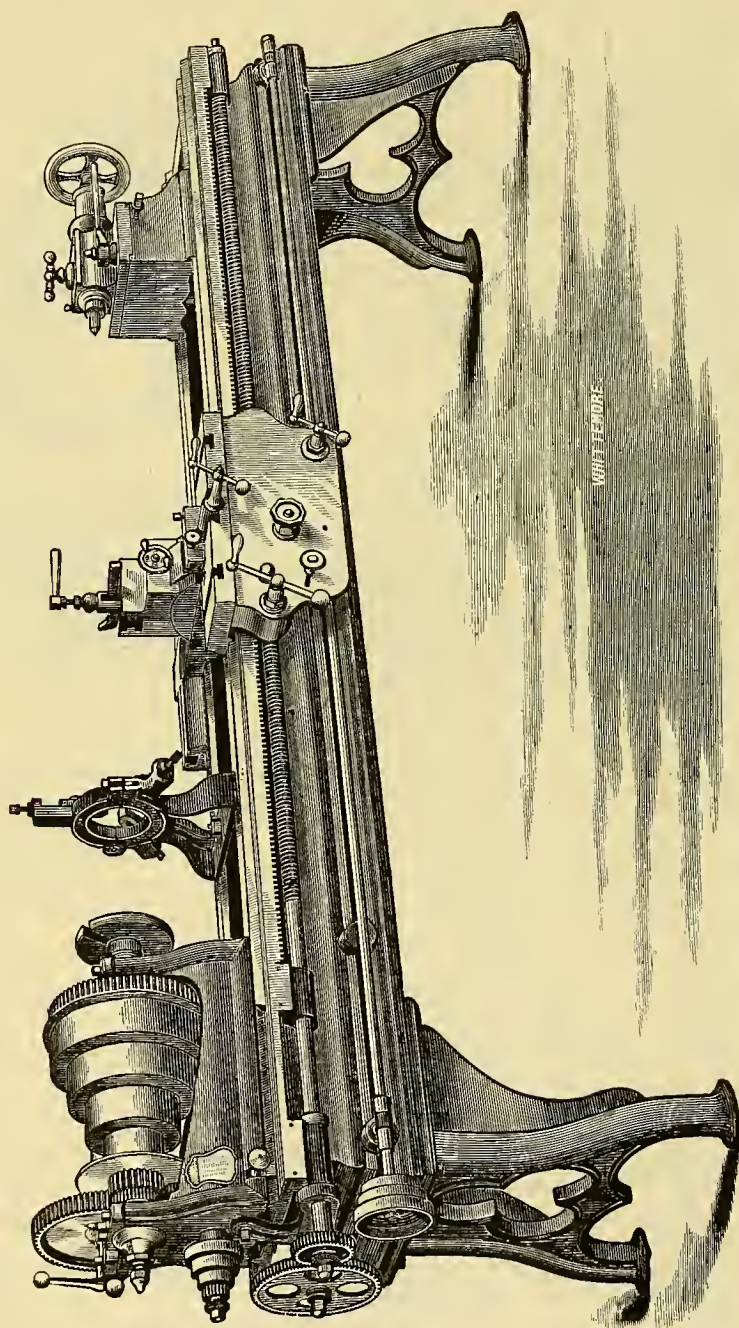
## Engine Lathes.

Swing over ways (inches),	15	16	18	20	22	25	28	30	32	34	36	38	40	42	46	54	60
Length of bed (feet),.....	6	8	8	10	10	10	12	12	12	14	16	14	16	18	18	18	20
Swing over carriage (in.),.	6½	7	8½	9	10	16	20	22	21	23	25	25	27	29	32	34	51
Turns (feet and inches),...	3-6	5-2	5-6	6-8	6-4	6	7-10	7-8	7-2	9	10-10	9	10-10	12-8	12-4	11-10	13
Weight (pounds),.....	1100	1400	1900	2500	3000	3980	5100	5500	6025	6685	7190	8500	9280	10360	11500	15000	16500

Beds are made any desired length. Power cross-feed, Compound Rest and Three-tooled Rest for turning shafting and cutting screws, furnished extra.



## Engine Lathe.

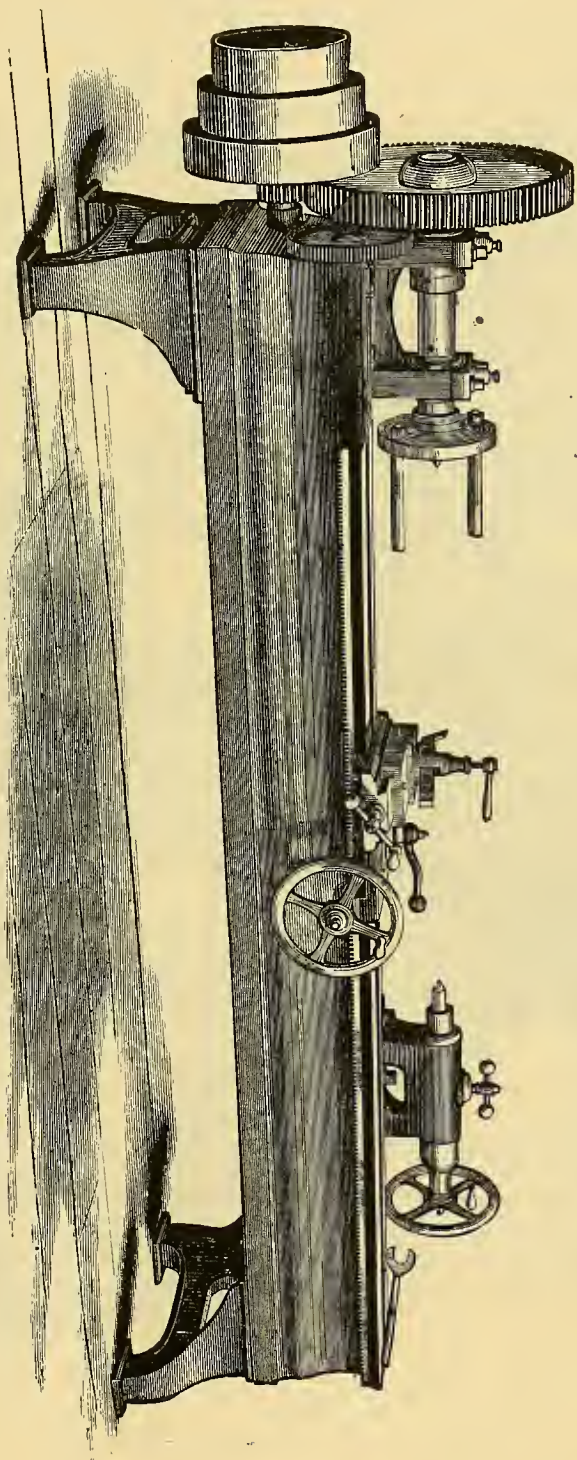


The above cut represents an Engine Lathe with a twelve feet bed, having twenty inches swing, with or without cross-feed. All the sizes of these lathes have broad-faced cones and gears, forged steel spindles, large journals, composition or iron boxes, an improved apparatus for chasing threads, and a new and improved rest with which the tool can be immediately adjusted (raised or lowered) without loosening it, and is perfectly solid. Each machine is furnished with counter-shaft, pulleys and hangers with self-lubricating boxes. The table below gives the dimensions of the various sizes of these lathes:

Swing over ways (inches),.....	12	13	14	15	16	18	20	22	24	26	28	30
Length of bed (feet), .....	5	5	6	6	7	8	9	10	10	12	12	12
Swing over carriage (inches), .....	8½	9½	10	10½	11½	12¾	14½	15½	17	19	20½	22½
Turns (feet and inches),.....	2-9	2-9	3-6	3-6	4-4	5-2	5-9	6-3	6	8	7-6	7-6
Weight (pounds), .....	1150	1200	1400	1450	1710	2200	2880	3820	4200	4250	6560	6600



## Car Axle Lathe,



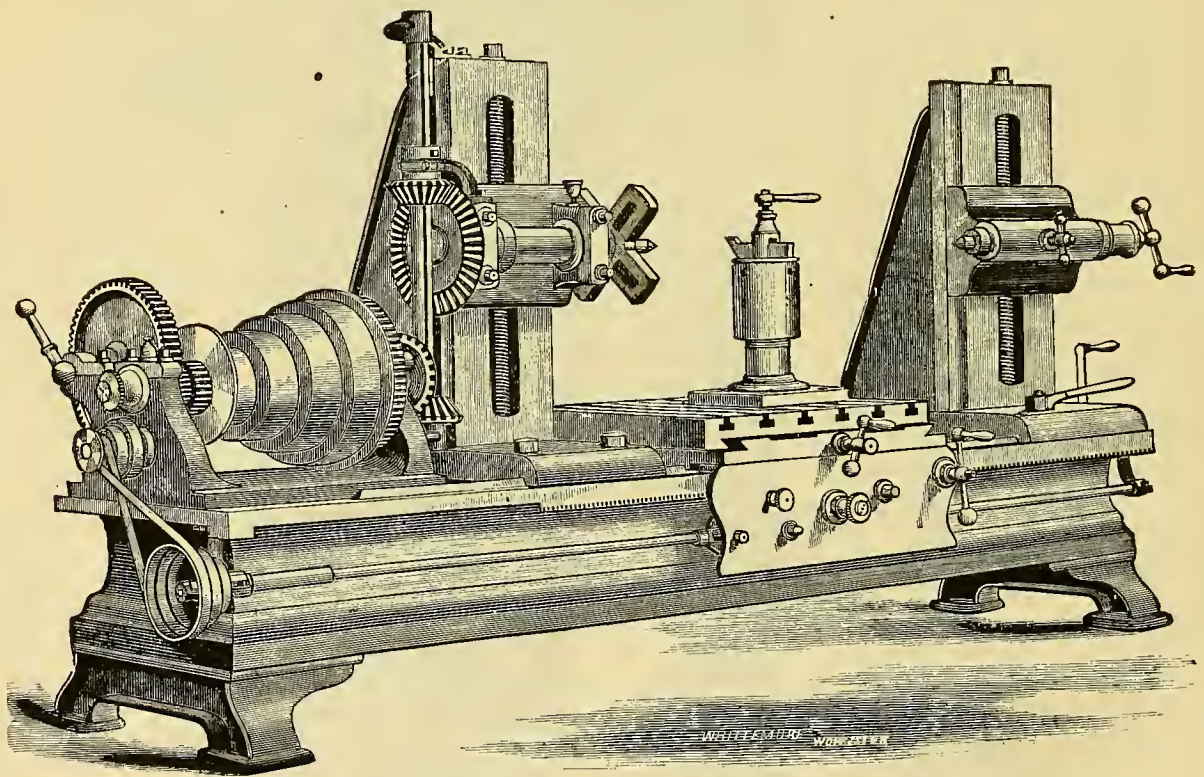
### Expressly Designed for Turning of Car Axles.

The above cut represents an Axle Lathe made from new and improved patterns, and especially adapted to turning car axles. It has steel spindles and composition boxes, with two grades of feed, one twelve and the other sixteen to the inch (not shown on the accompanying cut); steel screws, head spindle, four inches in diameter; tail stock spindle, three inches in diameter. The distance between centres is eight feet two inches, the cone pulley is nineteen inches in diameter, with four inch face. It has a pinion gear on cone, five and one-half inches in diameter; spindle gear, thirty inches in diameter, with three inch face. There are furnished with this lathe wrenches, and counter-shaft with patent self-lubricating pulleys and boxes. It weighs 4,200 pounds. We have no hesitation in recommending this lathe for use in railroad shops, or to other parties who may desire a machine for this kind of work, as being first class in every particular.



# Gear's Illustrated Catalogue of

## Horizontal Boring Mill.

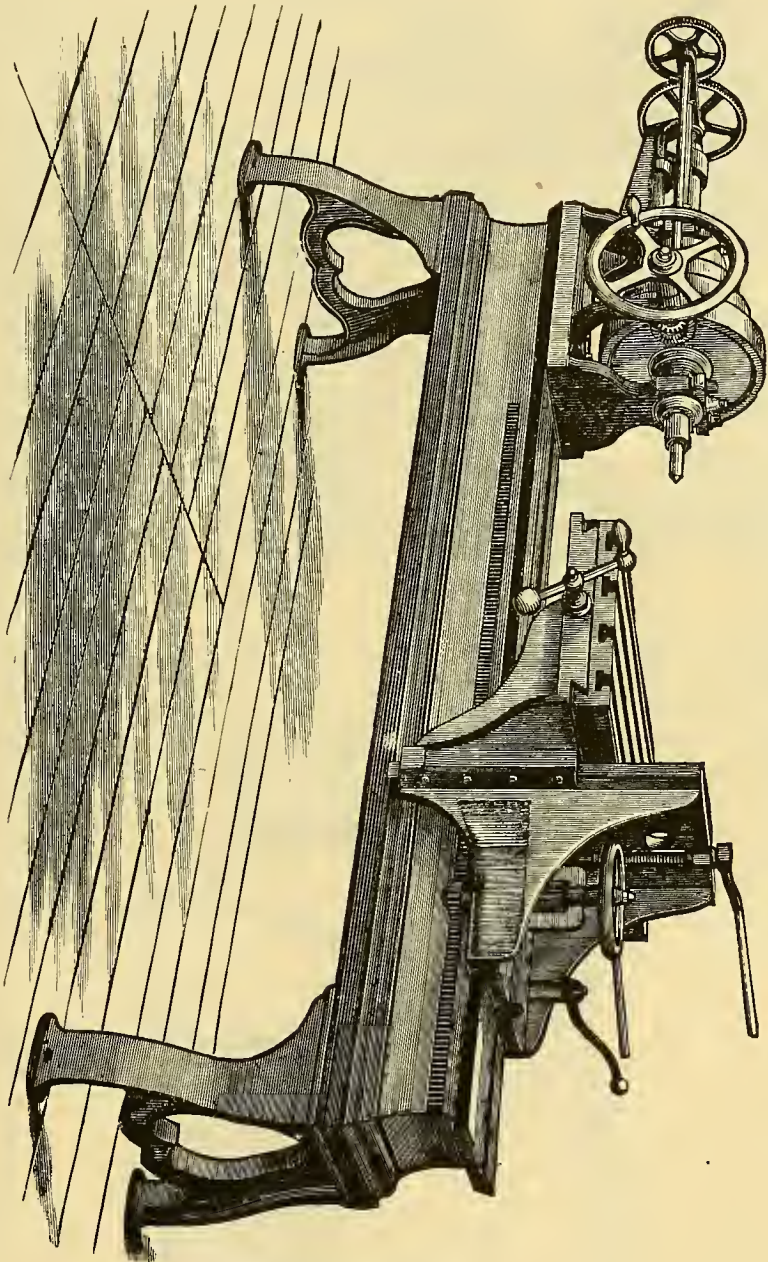


The above illustration represents a Horizontal Mill on a 14 feet bed, which will take in a boring bar 6 feet 3 inches long. It swings  $5\frac{1}{2}$  feet over the ways and  $4\frac{1}{2}$  feet over the table. It is intended for boring cylinders and other work, but can be used for chucking and turning pulleys,  $3\frac{1}{2}$  feet and smaller in diameter, as it has a compound rest which can be bolted to the table. It has, also, a patent power cross and friction feed, and a large extra face plate. The head and tail stock moves on a parallel line with the table, by the means of a rod and bevel gears. The upright to which the tail stock is attached, can be moved at any point on the bed-piece by a screw. It has steel spindles, composition boxes, and all the wrought iron work is case-hardened. Any length of bed desired will be furnished. With the above are furnished self-oiling counter-shaft, pulleys and hangers. It weighs 9,500 pounds.



# Wood & Iron Working Machinery.

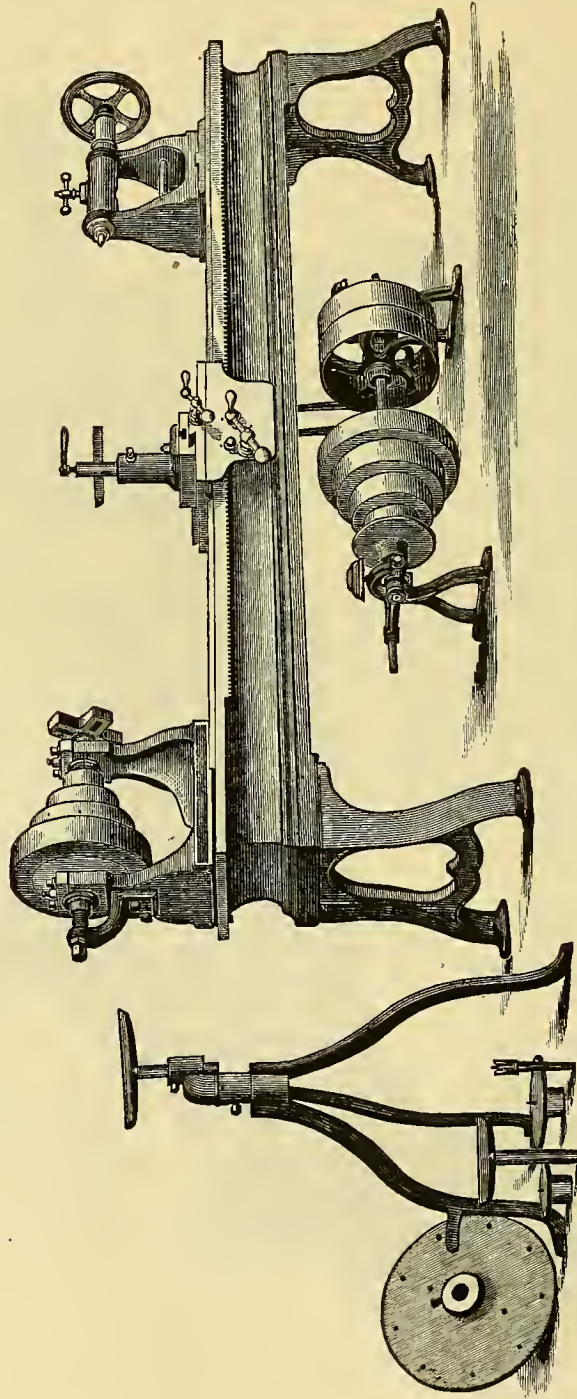
Traverse Drill.



The above cut represents a No. 2 Traverse Drill on an eight feet bed, for boring and drilling. It has an adjustable table three feet long and eighteen inches wide. When at its lowest point it is eight and one-half inches from the center of the spindle, and can be raised to any desired height by means of a screw. It can be furnished with power feed if desired. The No. 1 Drill is furnished with back gears and heavier head stock. The adjustable table is raised and lowered by two screws with rod and bevel gears. Both sizes are furnished with a counter-shaft, with patent self-oiling pulleys and boxes, wrought iron rack and pinion, and composition boxes. The wrought iron work is case-hardened. Any desired length of bed can be furnished.



## Pattern Maker's Lathe.



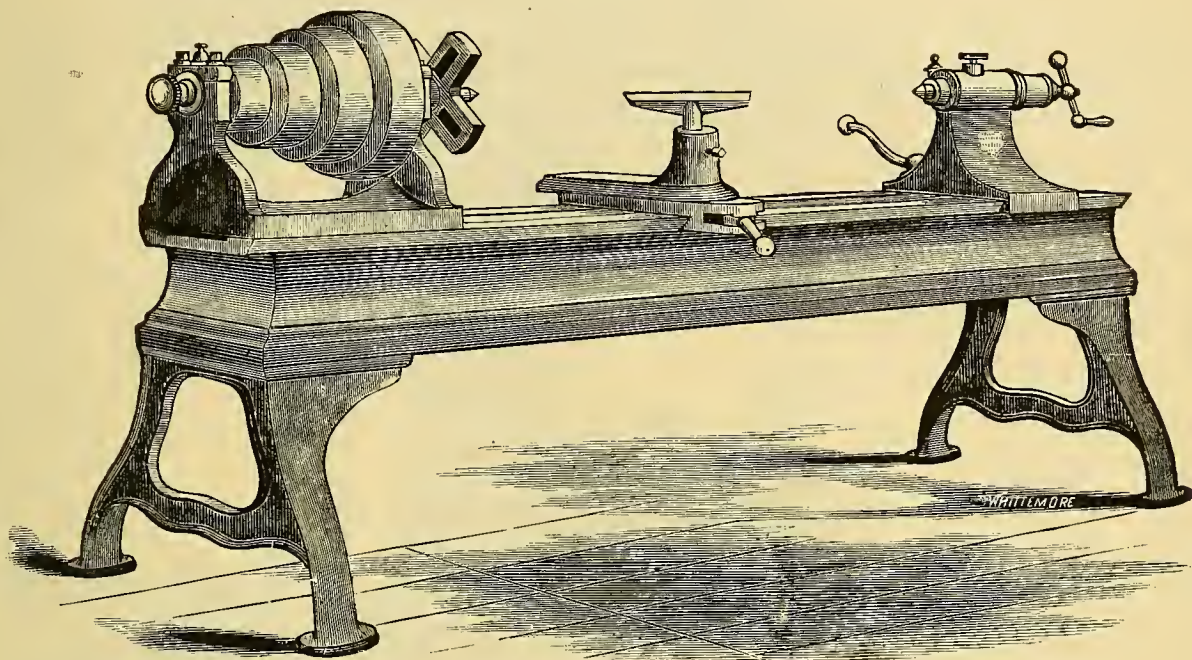
### An Excellent Machine for Pattern Makers.

This cut represents a Pattern Maker's Lathe on a 10½ feet bed. It swings 26 inches over the ways, and 22 inches over the carriage. It has steel spindles and composition boxes. The carriage slides on the ways to feed by hand with rack and pinion. It has also a screw attachment for feeding across the bed by hand, and an adjustable post for holding the tools or rest. The tail stock can be set over to turn tapers. It has a large face-plate for the back end of the spindle, with a stand and rest to turn 7 feet in diameter. It has also two gimlet pointed face-plates, and one spur face-plate. A counter-shaft is furnished, with patent self-lubricating pulley and boxes. It weighs 2,250 pounds.



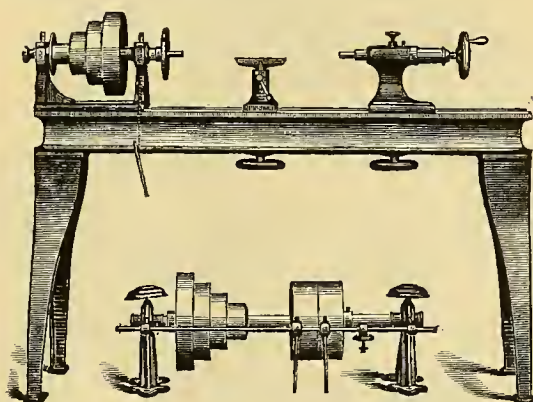
# Wood & Iron Working Machinery.

## Large Hand Lathe.



The above illustration is drawn from a twenty-inches swing, ten feet bed Hand Lathe, but represents the parts and works generally of larger and smaller sizes. The different sizes of these hand lathes are made from new and improved patterns, with large broad faced cone, steel spindles and composition boxes. All the wrought iron work is case-hardened. They are furnished with a counter-shaft, with iron cone and patent self-oiling pulleys and boxes. There are four sizes, viz.: Thirteen inches swing with a six feet bed, and weighs 575 pounds. Sixteen inches swing with a six feet bed, and weighs 975 pounds. Twenty inches swing with a six feet bed, and weighs 1,200 pounds. Twenty-four inches swing with a ten feet bed, and weighs 2,200 pounds.

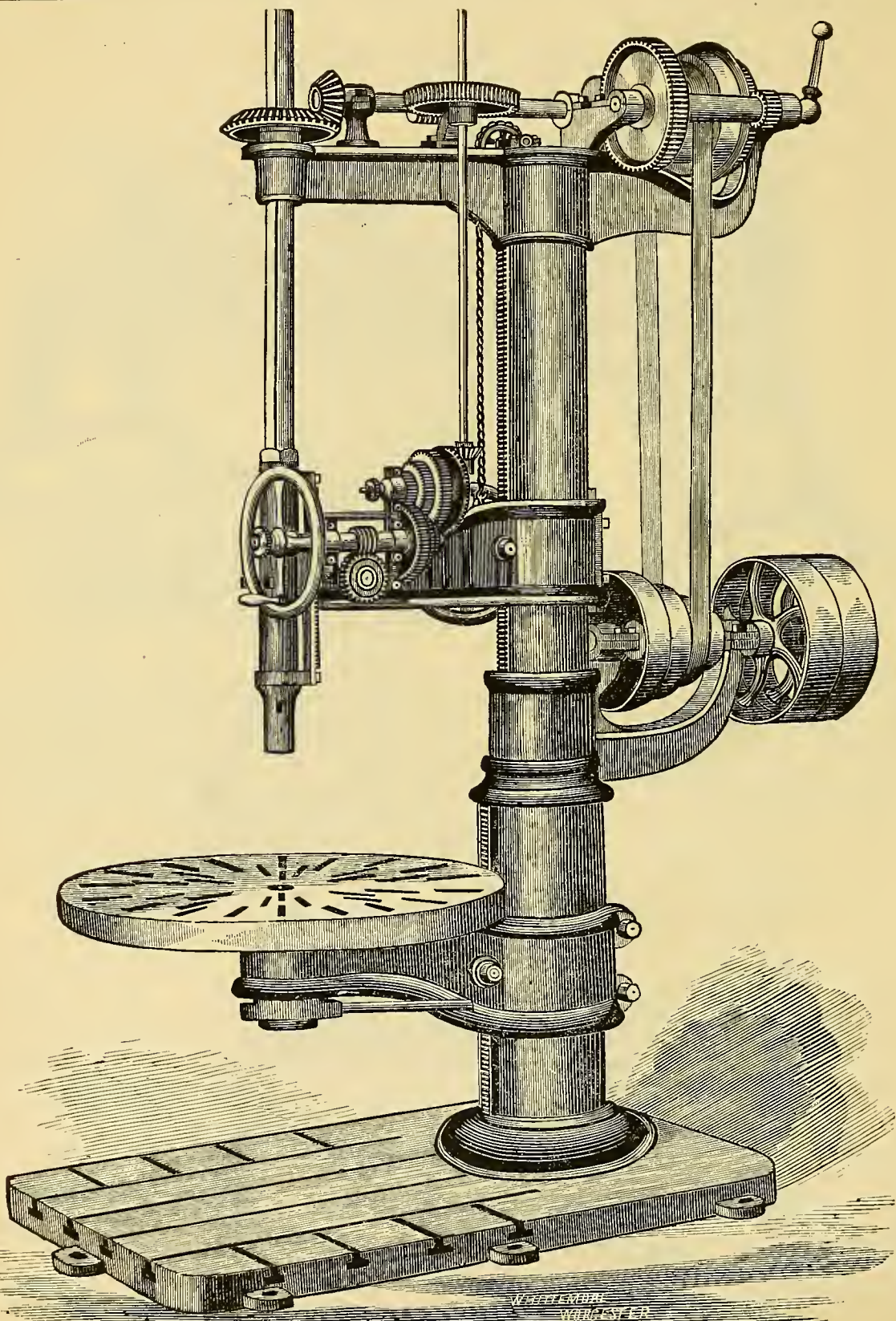
## Small Hand Lathe.



This cut represents a small Hand Lathe with a five feet bed and fourteen inches swing, with counter-shaft and hangers complete.



# Gear's Illustrated Catalogue of



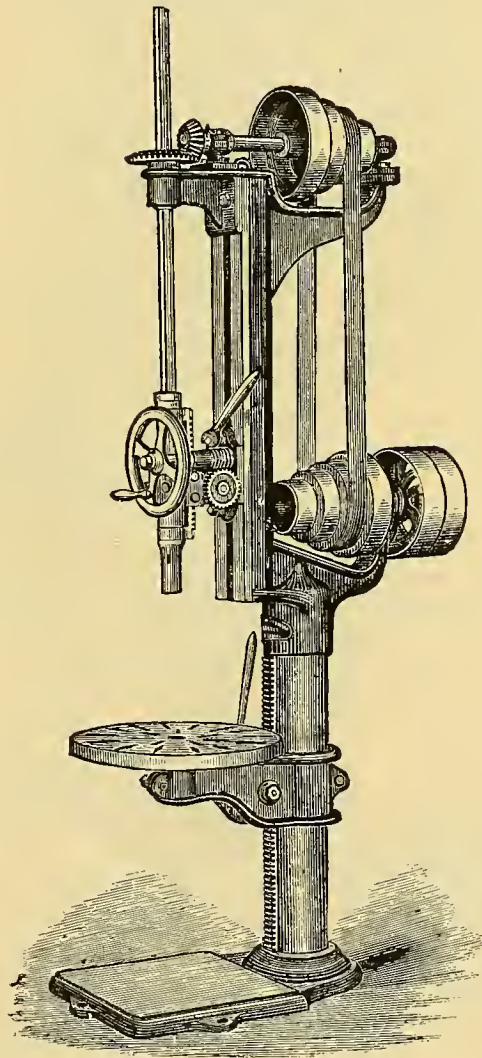


## Large Upright Drill.

FOR ILLUSTRATION SEE PAGE 98.

The cut on page 98 represents a No. 4 Upright Drill, with an adjustable table, 42 inches in diameter, and receives a piece 54 inches in height. It has a traverse of 26 inches, and is movable around the column, making it adjustable to any desired point. The bed-plate can also be used for a drilling table, being perfectly true with the spindle, and will receive a piece 72 inches in height. It has a patent friction feed. It has also steel spindles and cut gears, with three changes of feed, given by a cone of gears. It weighs 5,300 pounds.

## No. 1 Upright Drill.

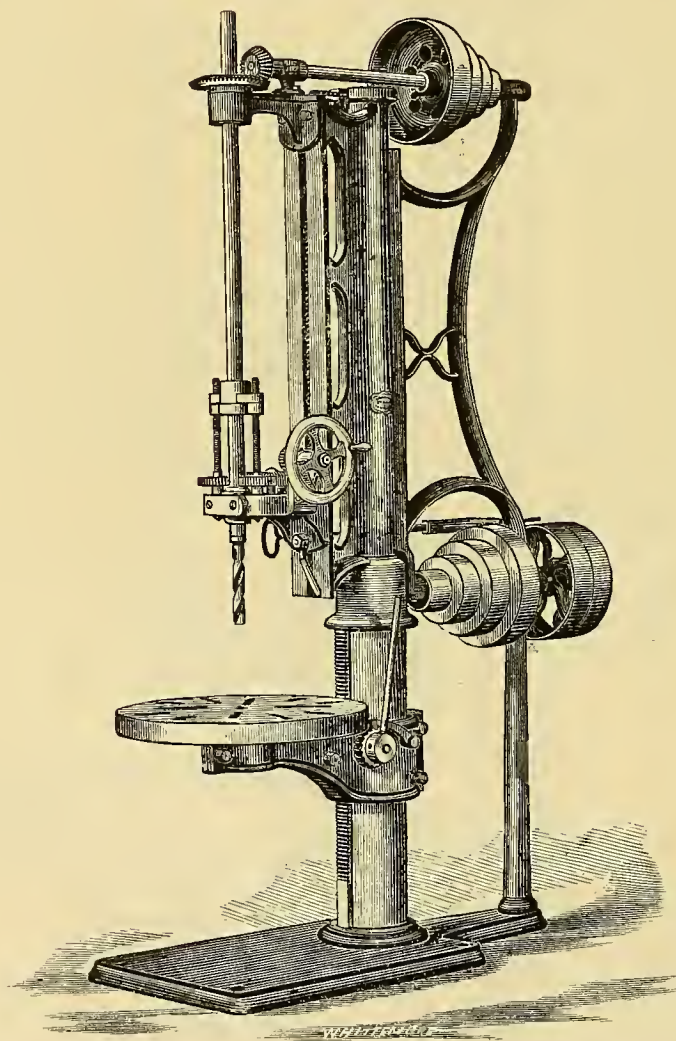


The above cut represents a No. 1 Upright Drill. The table, which is movable around the column (making it adjustable to any desired point), is 18 inches in diameter, has a traverse of 20 inches, and will receive a piece 36 inches in height. The stationary or lower table is true with the spindle, and will receive a piece 48 inches in height. It has a steel spindle and wrought iron racks and pinions, and all the gears are cut. It weighs 600 pounds.



# Gear's Illustrated Catalogue of

## Medium Size Upright Drill.

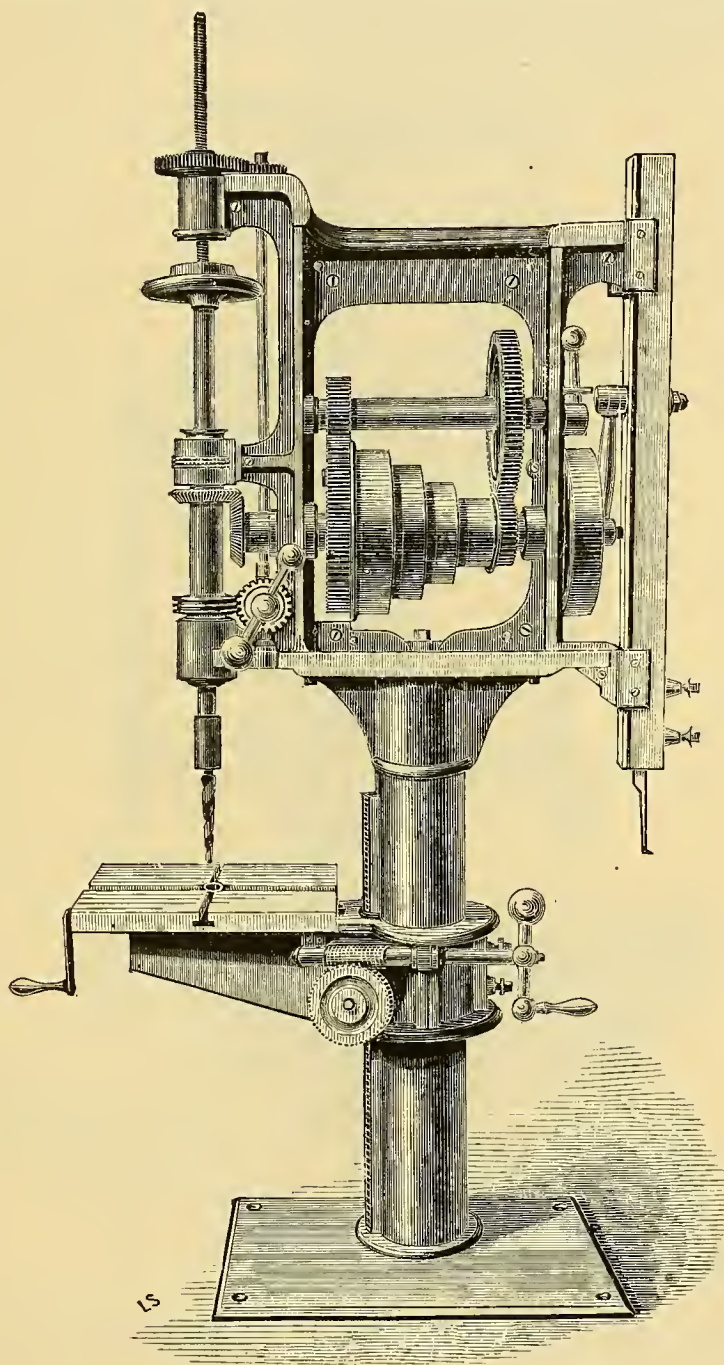


The above illustration represents a medium size Upright Drill with an adjustable table 24 inches in diameter. The machine will receive a piece 34 inches in height. It has a traverse of 24 inches, and is movable around the column, making it adjustable to any desired point. The bed-plate can be used for a drilling table, being perfectly true with the spindle, and will receive a piece 54 inches in height. It has a patent gear feed with three changes. All the gears are cut, and all the parts are made in the most workmanlike manner.



# Wood and Iron Working Machinery.

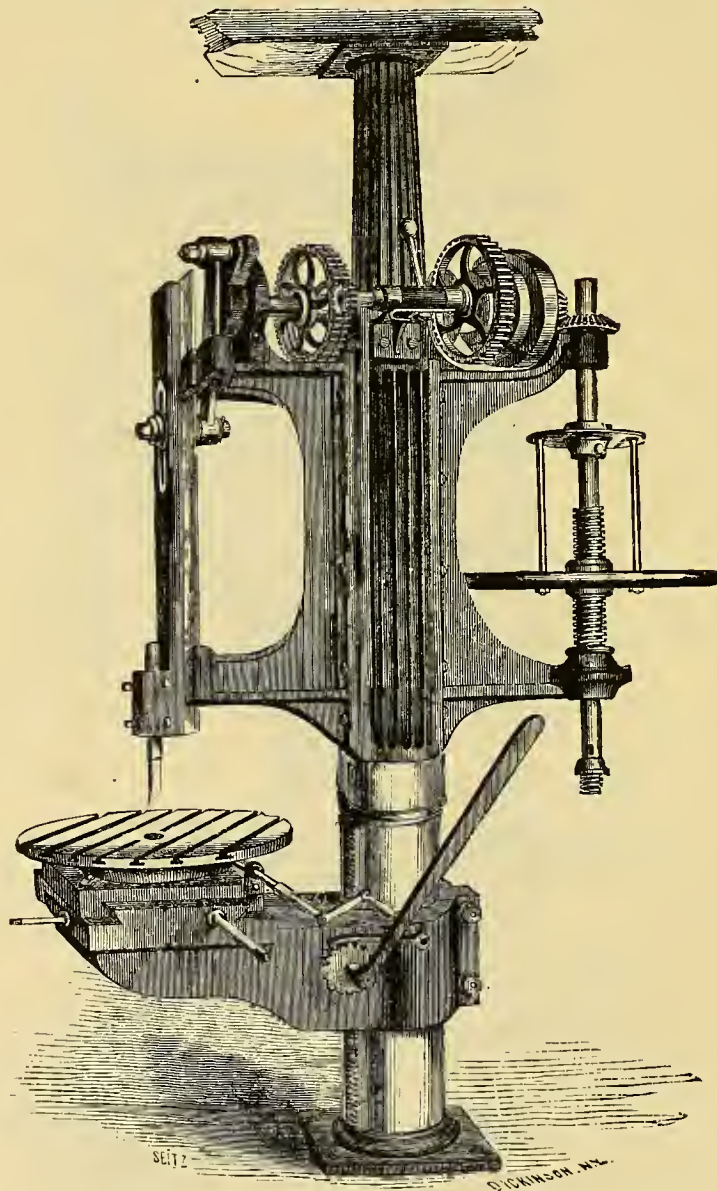
## Combined Drill and Slotting Machine.



The machine above represented will bore and spline a pulley 25 inches in diameter. There are several different sizes, swinging from 10 to 44 inches. The larger machines carry a 3 inch drill strongly, and are fitted with change gears for quick or slow feed. Either side can be instantly thrown out and will remain stationary while the other is running. Only the best materials are used, and the work is done in the most thorough manner. Each machine is furnished with a counter-shaft and boxes, with a self-oiling loose pulley.



## Combined Slotter and Drill.

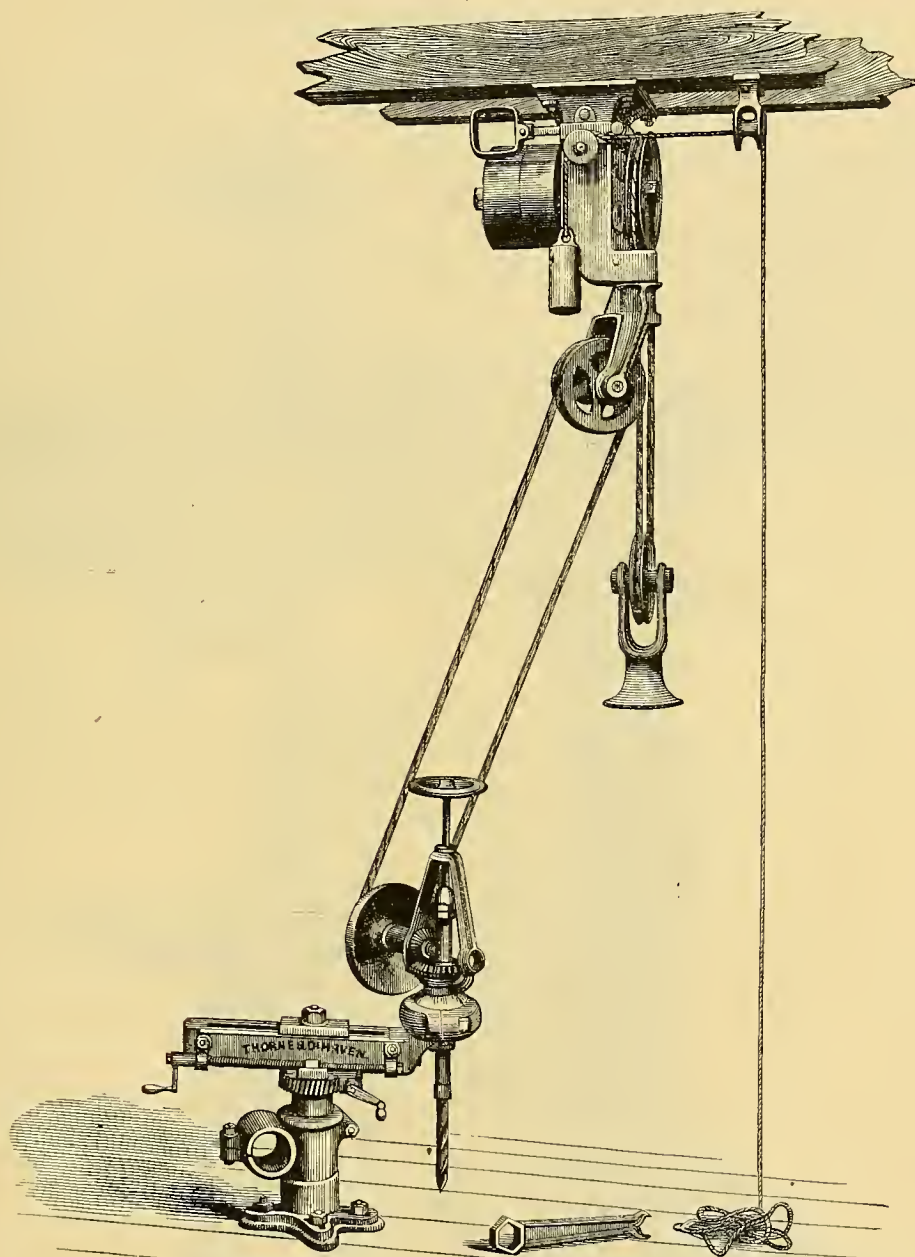


The upright of this machine is strong and can take the place of a column in a building. Both arms are fastened to it, and on the lower part the table revolves, and can be placed either under the drill or slotter, or one side out of the way. The table is moved vertically by means of a rack and pinion and, with the exception of self-feed, has all the movements of a regular slotter. It is strongly back-gearred, has large and wide cones, and weighs about 2,500 pounds. For drilling of all kinds, key-seating, and all work to which a slotter can be applied, this is a very convenient machine. The stroke of the tool-bar can be regulated to anything under twelve inches, and it will drill or slot to the center of forty inches.



# Wood and Iron Working Machinery.

## Portable Radial Drill.



This machine has all the conveniences and adjustments of Radial Drilling Machines and can be placed with greater facility than a ratchet-brace, and will drill at any angle, in any position, at any distance, and in any direction from the power. There are three sizes of this Drill, viz.:

No. 1. This machine will drill up to  $1\frac{1}{4}$  inch diameter. The spindle is of  $1\frac{1}{4}$  inch steel; its socket is the same as the No. 2 Morse Twist Drill Socket and has 6 inches feed. The post has 5 inches vertical adjustment. The radial arm will rotate the point of the drill through a circular area of 33 inches diameter, by means of a worm and tangent wheel. It weighs 120 pounds.

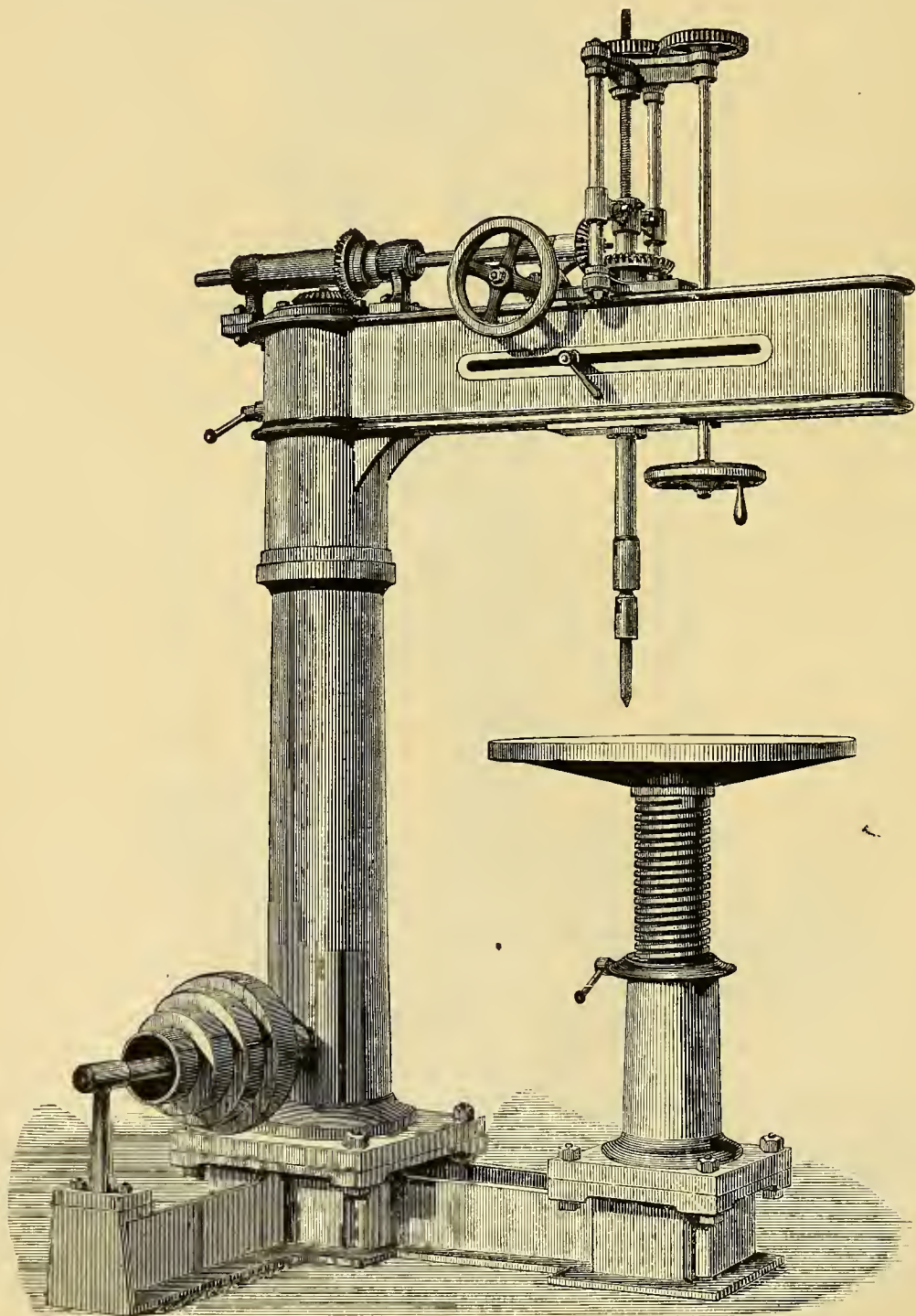
No. 2. This machine will drill up to  $1\frac{1}{2}$  inch diameter. The spindle is of  $1\frac{1}{2}$  inch steel; its socket is the same as a No. 3 Morse Twist Drill Socket and has 6 inches feed. The post has 6 inches vertical adjustment. The radial arm will rotate the point of the drill through a circular area of 43 inches diameter, by means of a worm and tangent wheel. It weighs 200 pounds.

No. 3. This machine will drill up to 2 $\frac{1}{4}$  inches diameter, in the solid, and bore up to 6 inches diameter with boring bar and cutter. It has 8 inches feed, working *automatically*, if desired, with three speeds. It weighs 230 pounds.



# Gear's Illustrated Catalogue of

## Improved Radial Drill Press.





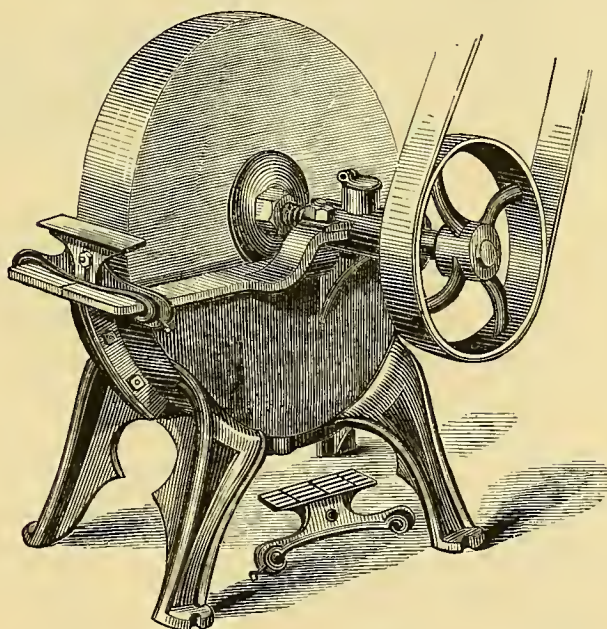
# Wood and Iron Working Machinery.

## Improved Radial Drill Press.

FOR ILLUSTRATION SEE PAGE 104.

This Improved Radial Drill has this advantage, in addition to any other in ordinary use, that it adapts itself to the position of the piece of work to be drilled, thus obviating the necessity of moving and adjusting the latter, which, in the case of heavy pieces, is often tedious and difficult. The manner of accomplishing this will be readily understood by reference to the cut, in which the spindle is shown in its proper position, over the table for small work. The radiating arm is fitted to a neck at the top of the column, and traverses freely in all directions. In this slides the head, carrying the drill-spindle and gearing, which is moved backwards and forwards by a rack and pinion and hand-wheels on each side of the machine. It will be seen that the arm or swing is capable of being placed in any position, radiating from the column, as a center, and that the drill can hence be made to reach any point within the circle, except the part occupied by the column and the driving pulley. A large number of holes may thus be drilled in succession in the same surface, without moving the work, an advantage which will commend itself to machinists. It is especially useful in fitting up such work as steam engines, cylinders, steam chests, bed plates, &c. All work which cannot be conveniently handled may be drilled at one setting, instead of many, thus saving a vast amount of labor and inconvenience. Different kinds of bed plates are made, and an automatic feed can be attached, when desired.

## Patent Grindstone Frame.

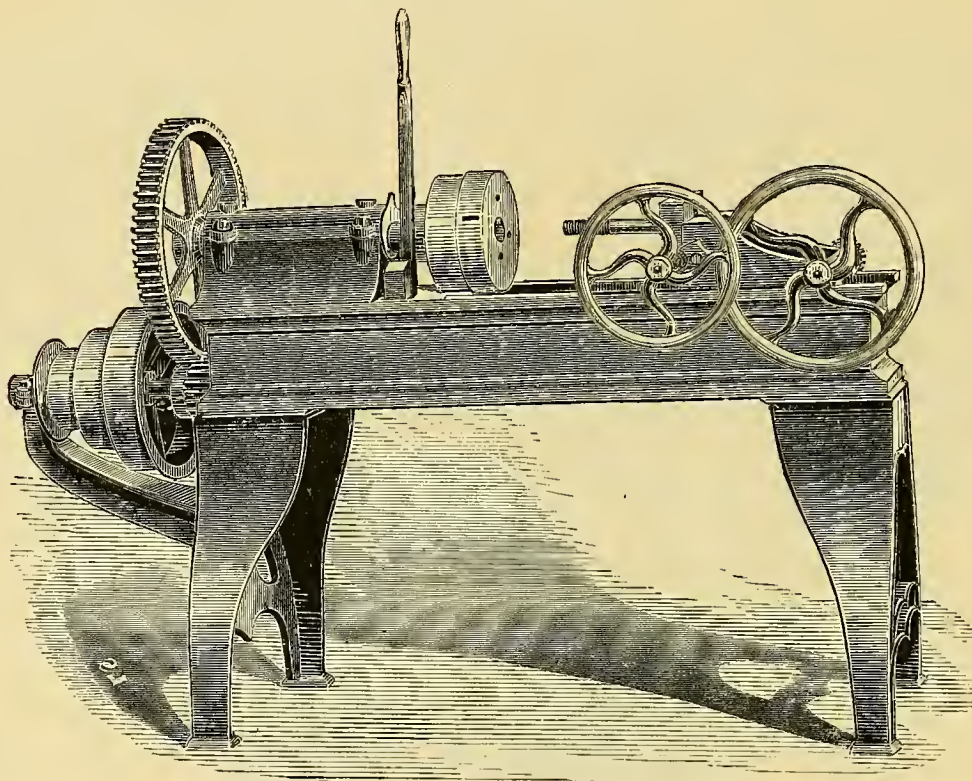


There are three sizes of the Patent Grindstone Frame above represented. No. 1 takes a 30 by 4 inches stone; No. 2 a 36 by 6 inches stone, and the No. 3 a 48 by 8 inches stone. The legs are cast on solid to the body of the frame, and are constructed and braced in such a manner as to prevent racking and breakage, which is a great advantage over the old style of pipe-stem legs that are bolted on the frame or let in on a dovetail. The spindle is of wrought iron, and has two loose flanges and two nuts, to throw the stone in the center of the trough. The bearings are long, and Babbitted, and are covered in such a manner as to prevent the entrance of any dirt or grit to cut them away. It has a tool-rest, which clamps to the top of the frame by a set-screw. The top or face of the rest is beveled, and by reversing the rest it will give an angle to or from the stone.



# Gear's Illustrated Catalogue of

## No. 2 Bolt Cutter.



The above cut represents a No. 2 Bolt Cutter. The thread is cut with the dies, which are fixed in the head and revolve around the bolt, which is held stationary in a vise, operated by a right and left screw on the shaft of the small hand-wheel. The bolt carriage is moved forward and backward by a rack and pinion operated by the large hand-wheel. This is much more convenient, especially with long bolts, than to revolve the bolt. The die cuts the thread by passing over the bolt but once; they never run backward, which obviates tearing the thread off the bolt or injuring the cutting edge of the dies. When the thread has been cut as far as desired, the dies are opened by moving the lever, and the bolt is withdrawn while the machine continues in motion as before. Another bolt may then be inserted, and the operation continued with much saving of time and labor. The dies can be removed in thirty seconds and those for another substituted, without turning or loosening a bolt, screw or nut, and when the dies are placed in the head of a machine it combines every advantage of a solid die and adjustable dies. Should the dies cut too large or too small, they may be adjusted in thirty seconds to any variation, from an eighth of an inch down to the hundredth part of an inch. By this means bolts can always be made to fit the nuts, no matter how much the taps may be worn. It will cut the usual V, square, or ratchet threads, with equal facility, and at one cut. It is provided with an "index," by the use of which the machine can be instantly adjusted to cut the required size, so that the bolts can be made to fit the nuts without the vexatious "cutting and trying" that is required on most machines. It also is provided with means for tapping nuts when needed, and the change from cutting threads to tapping can be made in a minute, or *vice versa*. There are three sizes of this machine, and each size is furnished with taps and dies, as named below, unless otherwise ordered.

**SMALL SIZE, OR NO. 1.** Weight, with counter-shaft, pulleys, hangers, &c., complete, about 700 pounds. Diameter of bolt,  $\frac{1}{2}$ , 5-16,  $\frac{3}{8}$ , 7-16,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ . Threads per inch, 20, 18, 16, 14, 13, 11, 10. The speed of the counter-shaft should be 120; diameter of pulley, 12 inches; face of pulley, 3 inches. This size of the machine is not geared, but it has a cone of three pulleys, with broad belt surface, sufficient for the work the machine is designed to do.

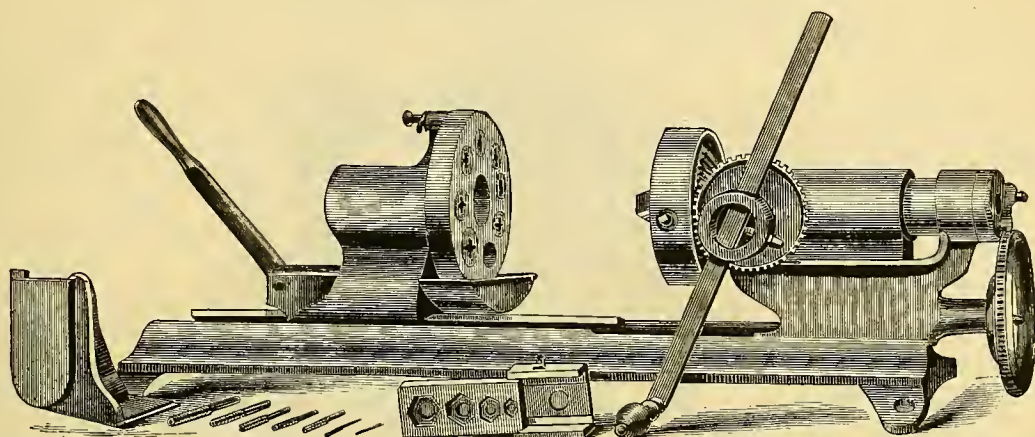
**MEDIUM SIZE, OR NO. 2.** Weight, with counter-shaft, pulleys, hangers, &c., complete, about 1,000 pounds. Diameter of bolt,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1,  $1\frac{1}{8}$ ,  $1\frac{1}{4}$ . Threads per inch, 13, 11, 10, 9, 8, 7, 7. The speed of the counter-shaft should be 150; diameter of pulley, 12 inches; face of pulley, 3 inches.

**LARGE SIZE, OR NO. 3.** This size is of the same general style as the No. 2, but it is much stronger and heavier, and is doubly geared. Weight, with counter-shaft, pulleys, hangers, &c., complete, about 2,000 pounds. Diameter of bolt, 1,  $1\frac{1}{8}$ ,  $1\frac{1}{4}$ ,  $1\frac{3}{8}$ ,  $1\frac{1}{2}$ ,  $1\frac{5}{8}$ ,  $1\frac{3}{4}$ ,  $1\frac{7}{8}$ , 2. Threads per inch, 8, 7, 7, 6, 6,  $5\frac{1}{2}$ , 5, 5,  $4\frac{1}{2}$ . The speed of the counter-shaft should be 150; diameter of pulley, 18 inches; face of pulley,  $4\frac{1}{2}$  inches.



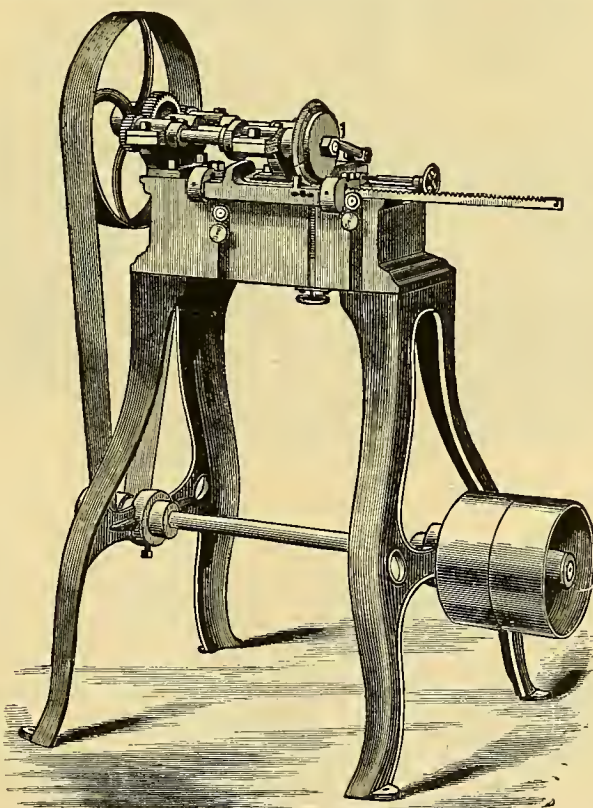
# Wood & Iron Working Machinery.

## Patent Hand Bolt Cutter.



The above cut represents a patent Hand Bolt Cutter. Each machine is furnished with a set of seven taps and dies, from  $\frac{1}{4}$  to  $\frac{3}{4}$  of an inch.

## Patent Saw Filing Machine.

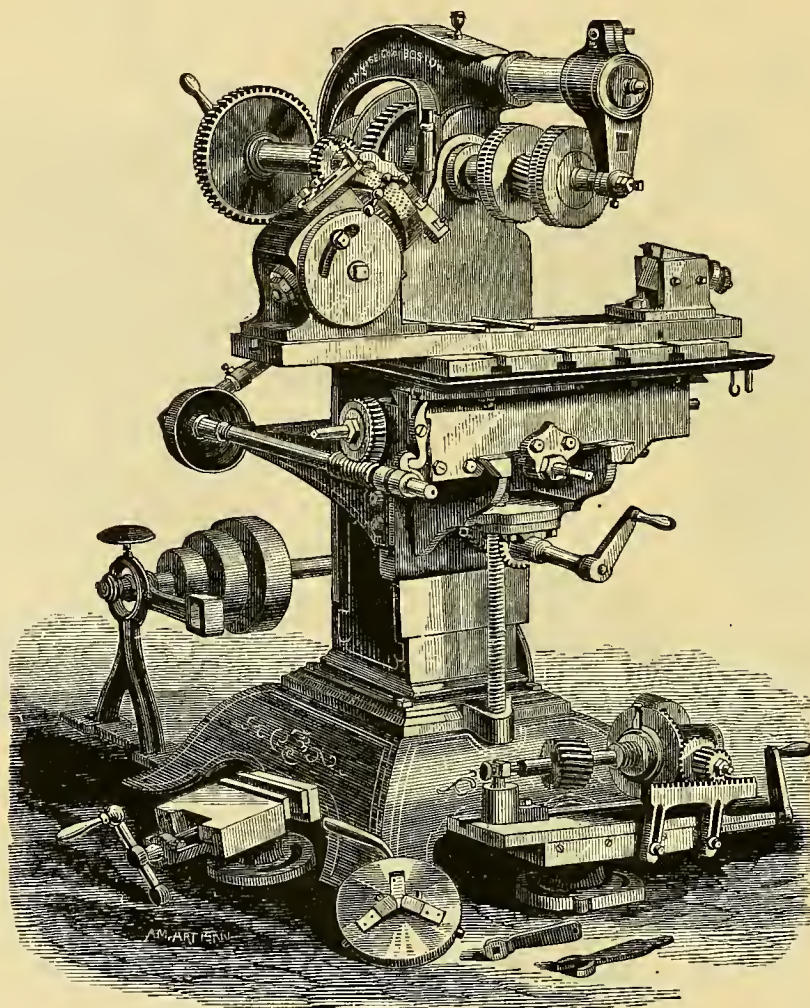


This is a newly invented and patented machine, designed particularly for filing band saws, scroll saws, and any straight saws, of uniform width. It is wholly automatic, the saw being held by clamps, and fed along for any size of tooth, which can be regulated by a screw, and the tooth is cut by a circular segment file. Each tooth is set as it is filed, the amount of set being easily regulated. It is especially valuable for filing hand-saws, as it works rapidly, and leaves every tooth even and perfect in shape and set. The tight and loose pulleys are  $8\frac{1}{2}$  inches in diameter,  $3\frac{1}{2}$  inches face, and should make 200 revolutions per minute, giving the file 50 revolutions. The machine weighs 225 pounds, and requires one-half horse-power to drive it. The amount of belting required is six feet of  $2\frac{1}{2}$  inches. The main driving belt should be  $2\frac{3}{4}$  inches wide.



# Gear's Illustrated Catalogue of

## Milling Machine.



Showing Universal Head and Centers in place; also, Spiral Cutting Attachment, Vise, &c., at base.

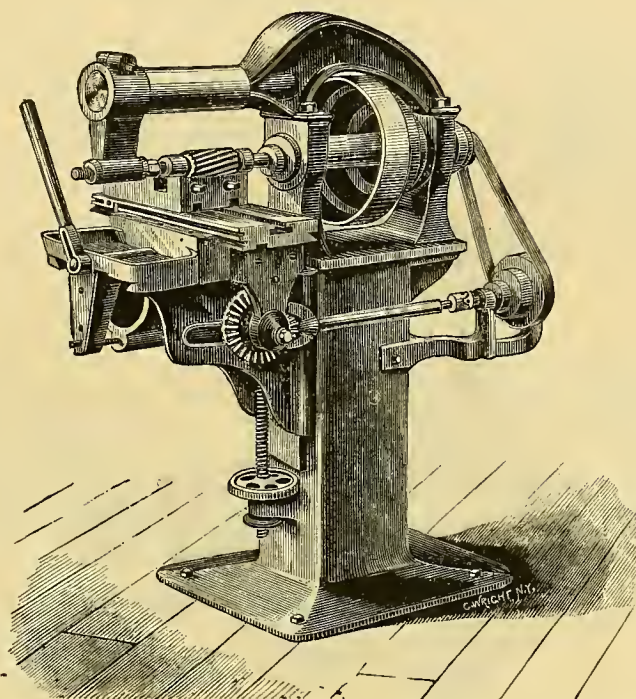
This machine is perfectly adapted for plain milling, and equals in power the ordinary milling machine. Its capacity and range, however, are double those of the common machine, while its peculiar construction admits of its application to an almost endless variety of work, quite impossible with machines of the ordinary styles. It is especially adapted to the making of the numerous tools in use in machine shops, such as fluting taps and reamers, cutting gears, both spur and bevel, and spirals of any pitch; finishing nuts, and bolt and set-screw heads; splining rods and shafting, &c.; also for making the cutters performing these and other kinds of work. The main arbor or spindle is of solid forged steel, 4 inches in diameter in its largest part, with true anti-friction curve upon its front end. If properly taken care of, therefore, it will never bind, work loose, or wear out of true. The arbor is 2 feet in length, and its rear bearing is a lined box. Upon its front end a screw is cut so that a chuck or face-plate may be used on it, and it has a nine-sixteenths hole through its entire length. The centre hole for the mill spindle is one and three-sixteenths inch outside, and tapers for seven inches in depth. The driving cone is connected with a full back gearing, like the head of an engine lathe, giving six speeds and allowing mills of every size to be used. Above the spindle is a large arm, carrying an outside centre support, by means of which cutters can be used at a distance of fifteen inches from the front of the machine; the rear part also forms a strong brace. The arm can be removed when the character of the work requires an unobstructed space above the mill spindle.

The weight of the machine, without attachments, is 1,300 pounds. Complete, 1,700 pounds. Perpendicular range, sixteen inches; length of feed, sixteen inches; cross motion, about five inches. The "attachments" comprise a rotary vise, spiral cutter, and a universal head, with its complement of a back-center and an extra table for taking in long work. The machine is sold either with or without attachments, at the option of the purchaser.



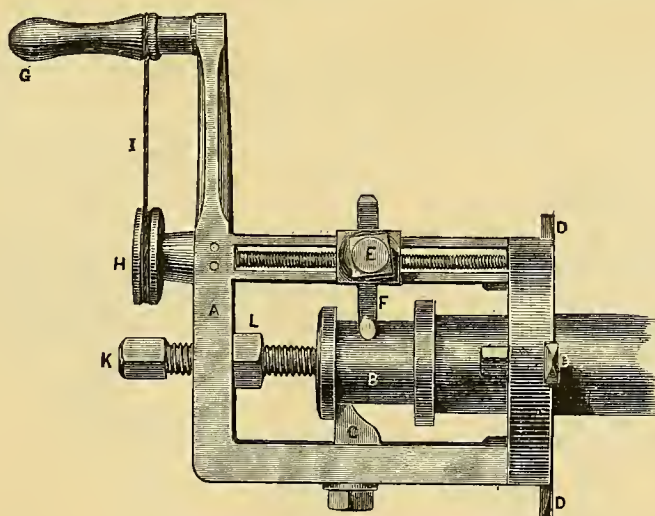
# Wood & Iron Working Machinery.

## Milling Machine.



This machine is designed for all light milling. The spindle is driven by a large cone pulley. The feed-table is six and one-fourth inches wide, twenty-four inches long, and is fed by a worm gear. The machine weighs 1,100 pounds.

## Wrist or Crank-Pin Lathe.

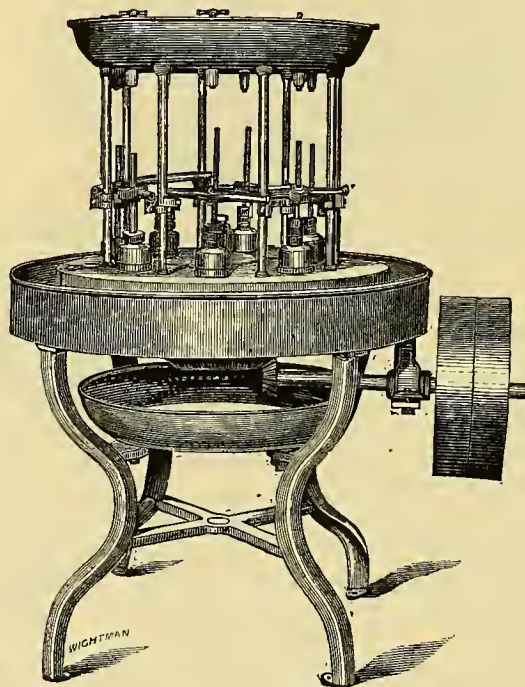


Hand Power.

This machine will turn wrist or crank-pins to engines without taking them out, and leave them as perfect as when first made.



## Nut Tapping Machine.



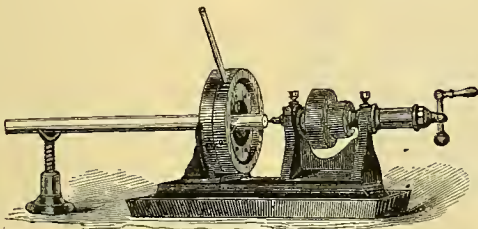
This machine runs seven taps, with three different speeds, and is so arranged that two of the taps may be run with the fastest, two with the slowest, and three at medium speed, at the same time—the gearing being so arranged as to enable the operator to get the desired speed for any given sized tap; or all may be run at any of the three speeds, if so desired, by having the necessary extra gears. By the substitution of the necessary gearing, which is easily done, three, two or one of the taps can be made to run “left hand.” It has a tight and loose pulley, to accommodate itself under a main line or counter line. The necessary oil is regularly supplied by graduating cocks, from a reservoir, in itself a source of economy.

The No. 1 machine taps from  $1\frac{1}{2}$  inch down to the smallest size. No. 2 taps from 2 inches down to the smallest size. No. 2 occupies the same space on the floor as No. 1; the difference is in the size of the gearing, which is heavier and stronger. The arrangement of this machine provides against any gumming or obstructions in the sockets resulting from chips, cuttings or oil. The sockets for holding the taps are so constructed that any tap will fit and work in or on any spindle, and the nuts, when finished, drop below the teeth of the tap, and when full the tap can be taken off and replaced without stopping the machine.

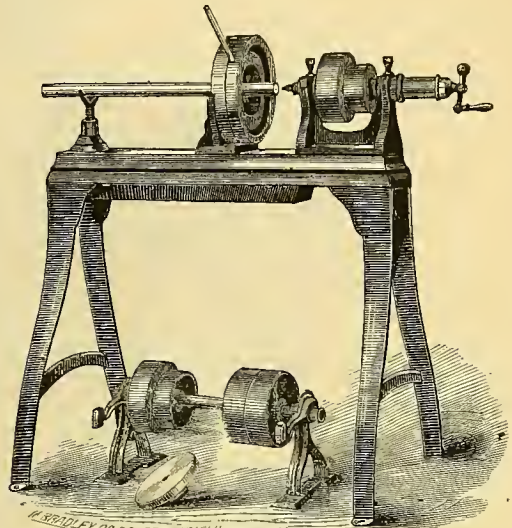


# Wood and Iron Working Machinery.

## Centering Machines.



No. 2.



No. 3.

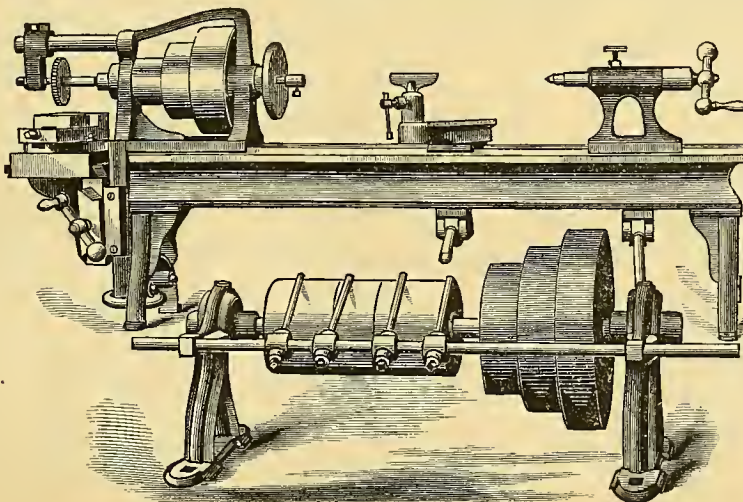
The No. 2 machine represented above will centre iron from one-fourth inch to four and one-half inches in diameter. It is set on a bed about two feet long, and the chuck is bolted to a separate stand, which is fitted to the bed, and can slide about eight inches, thus giving more or less room between the work and drill, as required. This is a very nice machine, and gives excellent satisfaction wherever used.

The No. 4 size is built in this style, and is a very large, heavy machine, with a capacity of from two to seven and one-half inches, and is adapted to centering car axles and other large work.

The No. 3 machine is larger than the No. 2, having a capacity of from one-fourth to five and one-half inches; it is set on a bed about three feet long, with iron legs; is furnished with counter and hangers complete, and is a perfect machine in itself. It is also supplied with a small table to hold in the chuck (shown on the floor in the cut) to rest small work on, thus making a horizontal drilling machine. The chuck can slide on the bed about twenty inches, giving ample room for any work required.

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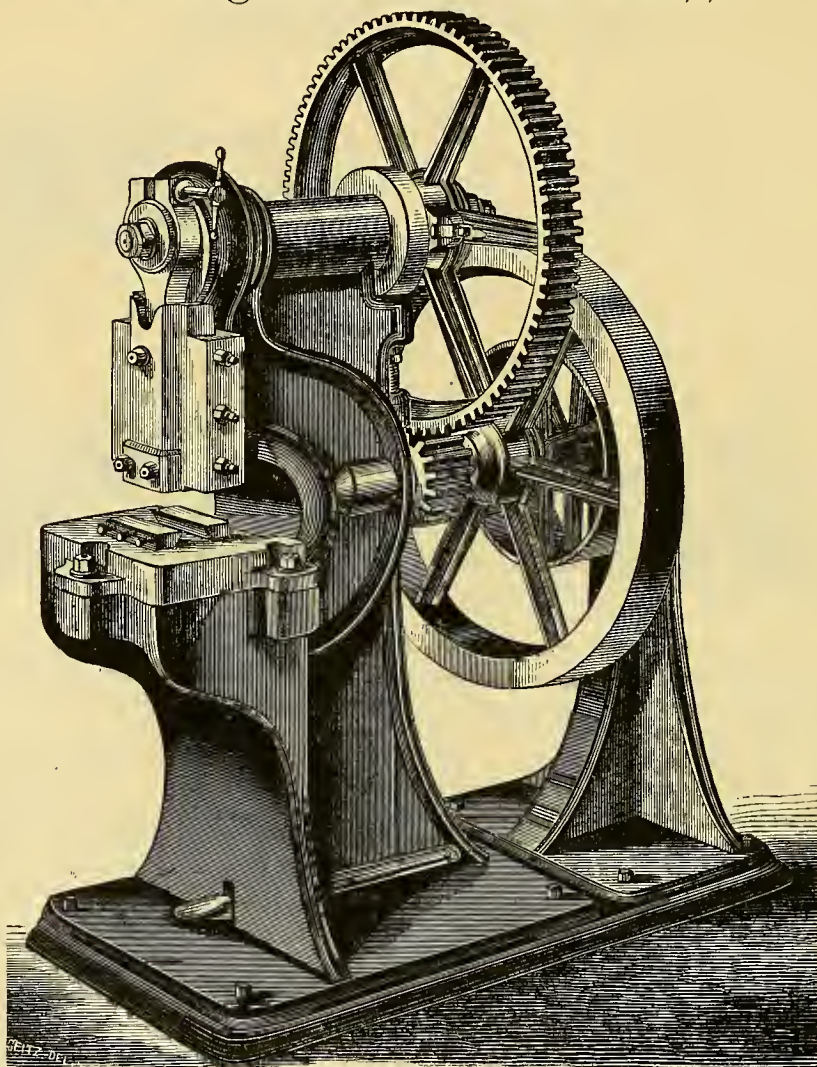
## Milling Lathe.





# Gear's Illustrated Catalogue of

## Back-geared Power Press.



WITHOUT BACK GEAR.

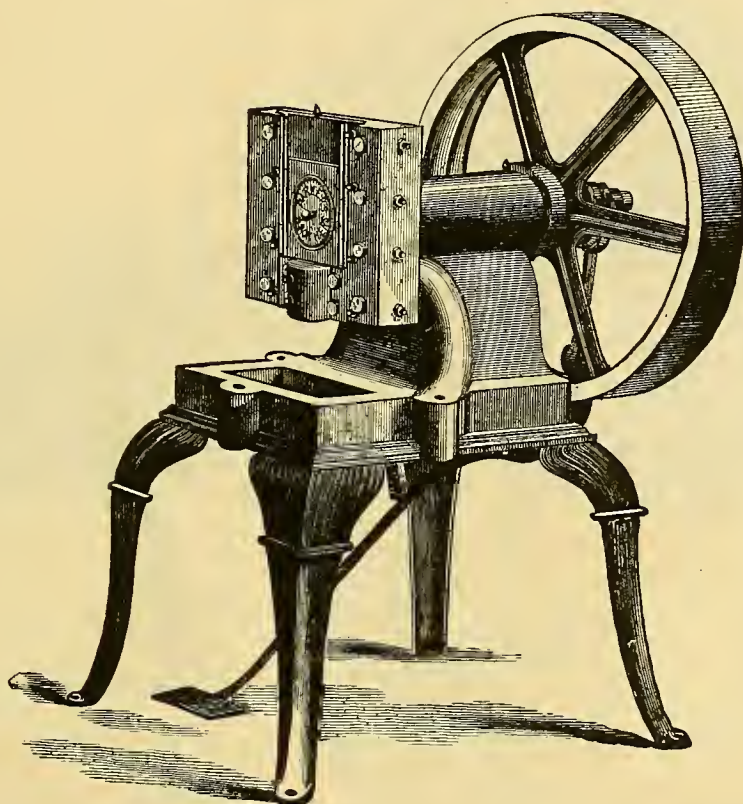
WITH BACK GEAR, 4 TO 1.

	1	2	3	3½	4	4½	5	3	4	5
Number, .....	1	2	3	3½	4	4½	5	3	4	5
Weight about (pounds),.....	600	1000	1700	1800	2800	3250	4500	2700	3800	6000
Size of opening in bed (inches),.....	4x6	5x8	7x10	10x10	9x12	14x20	11x14	7x10	9x12	11x14
Distance back from center of slide (inches), .....	4½	6	7½	9	9	12	10½	6½	7½	8½
Distance from end of slide to bed when } (inches),....	5	6	7	7	8	9	9	7	8	9
ring and slide are up,										
Motion or stroke of slide (inches),.....	1	1½	1½	2	1½	2	1½	1½	1½	1½
Adjustment of slide (inches),.....	1	1	1	1	1	1	1	1	1	1
Diameter of fly wheel (inches),.....	22	28	33	33	40	40	50	32	36	48
Weight of fly wheel (pounds),.....	125	225	400	400	650	650	1000	230	470	825
Diameter of pulley (inches),.....	22	28	33	33	40	40	50	16	20	24
Width of pulley (inches),.....	2½	3	3¼	3¼	4½	4½	5½	3¾	4½	5½
(Bed-peices and bolts, extra.)										



# Wood and Iron Working Machinery.

## Power Press.



WITHOUT BACK GEAR.

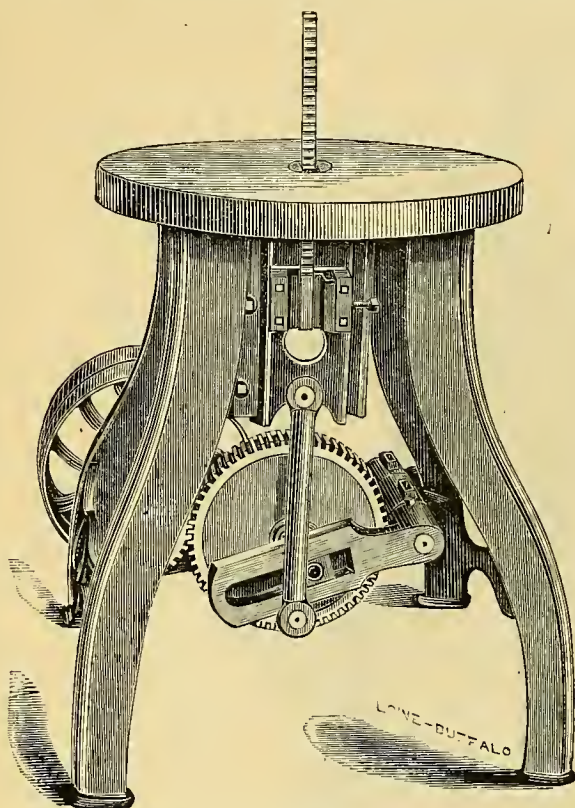
WITH BACK GEAR.

Number, .....	00	0	1	1½	2	2½	3	Tin- ners	Boil er.	2	2½	3	5	Cut- lery.
Weight about (pounds), .....	100	300	800	1200	1600	2300	3000	2300	2500	2800	3300	4300	12000	5500
Size of opening in bed (inches), .....	2x2	2x4	4x7	5x8	6x9	7x10	8x11	12di.	2x2	6x9	7x10	8x11	8x12	3x10
Distance back from center of slide (inches), ..	2½	3½	4½	5	5½	6	6½	13	16½	5½	6	6½	8	6½
Motion or stroke of slide (inches), .....	¾	1	1½	1½	1½	1¾	1¾	1½	1½	1½	1¾	1¾	2½	1¾
Adjustment of slide (inches), .....	½	½	½	¾	¾	¾	¾	¾	¾	¾	¾	¾	1	¾
Distance from end of slide to bed, } (inches), ..	4	4½	5½	6½	7½	8	9	7½	7½	7½	8	9	8	
Diameter of fly wheel (inches), .....	15	21	27	32	36	42	48	36	48	32	36	42	60	48
Weight of fly wheel (pounds), .....	20	90	150	230	470	600	825	470	825	230	470	600	1000	825
Diameter of pulley (inches), .....	15	21	27	32	36	42	48	36	48	16	20	24	24	24
Width of pulley (inches), .....	2½	3	3½	3½	4½	5	5½	4½	5½	3½	4½	5	8	5½

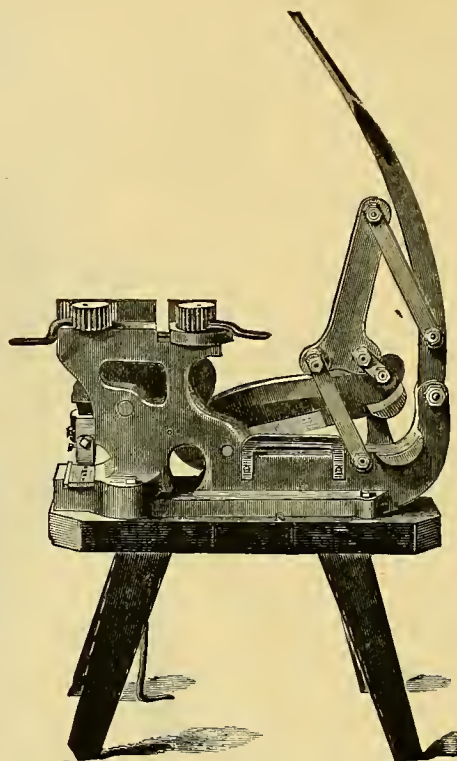
Bed pieces, bolts, counter- shafts and boxing, extra.



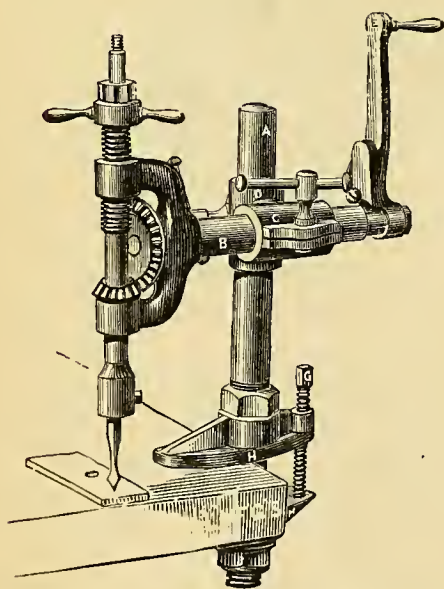
# Gear's Illustrated Catalogue of



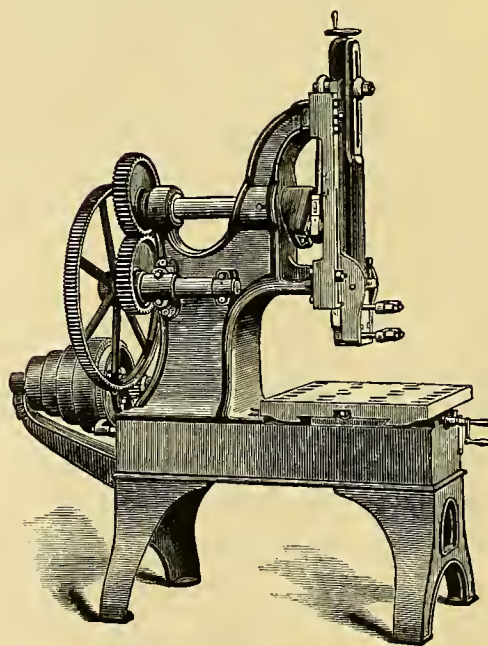
Key-Seat Cutting Machine.



Shear-Punch and Upsetter.



Angular and Ratchet Drilling Machine.

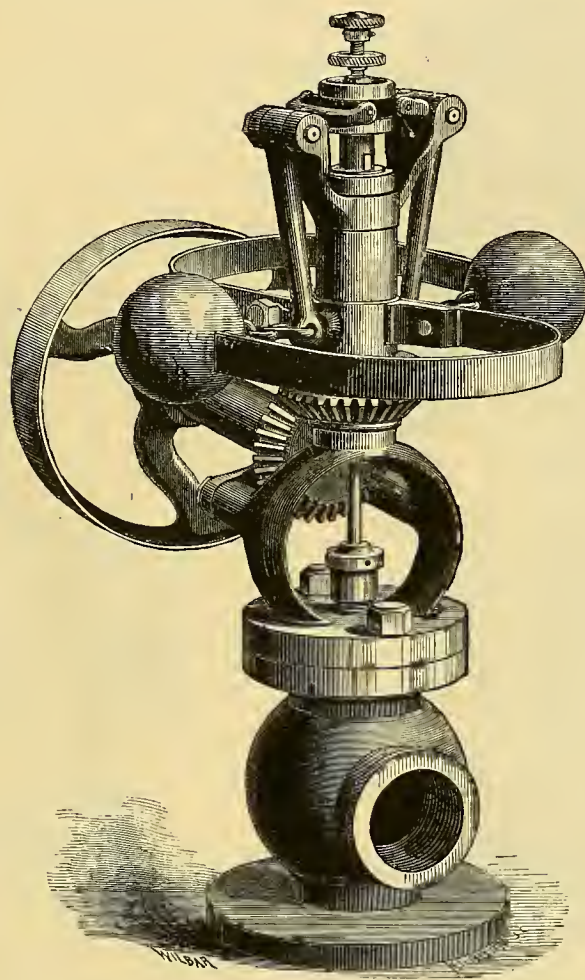


Splining or Slotting Machine.



# Wood & Iron Working Machinery.

## Patent Perfect Governor and Valve,



### For Stationary Steam Engines.

The particular invention in this Governor consists in relieving the joints of the weight of the balls, and the friction caused by rotating them; also, in dispensing with the gravity principle, as the balls do not rise and fall but always revolve on the same plane. As may be seen in the engraving, the balls are supported on bent steel springs, which also serve to rotate them, and throw them towards the center on the least decrease in speed. This arrangement secures great sensitiveness, and an extreme delicacy of motion. The speed of an engine may be instantly changed to any required degree, by simply turning the small hand-wheel seen on the valve-stem. The balls being very light, the Governor does not require much power to drive it, and it responds instantly to any change, however sudden or violent. These Governors may be run in any position, either vertical, horizontal, or inverted, but if wanted out of the usual position, they should be ordered specially.

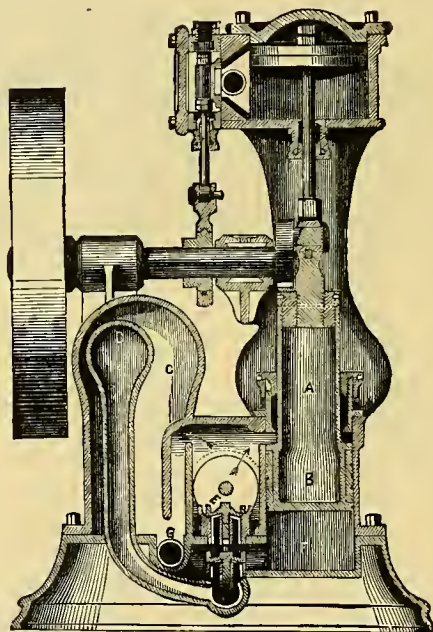
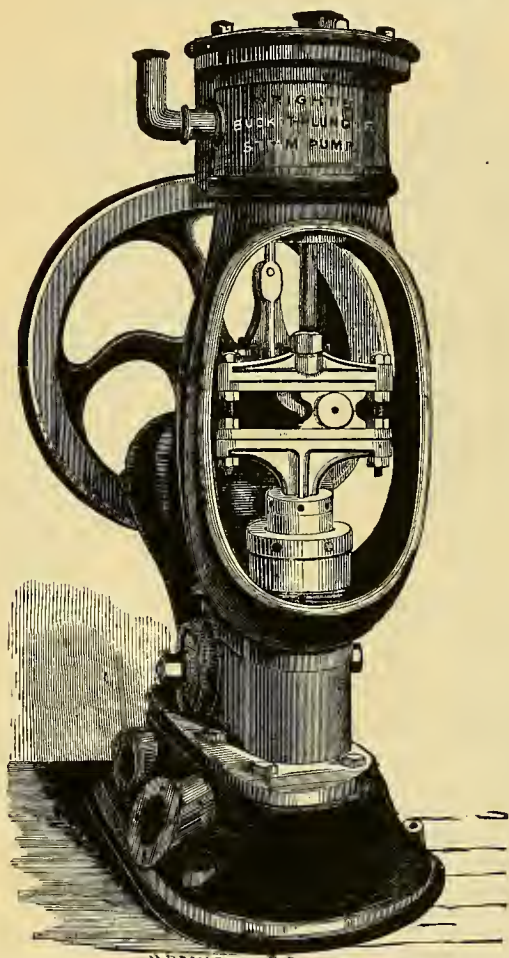
### Hardened Valves and Valve-Seats.

Long continued satisfactory action of a governor cannot ensue, unless that most vital part (the valve) retains its proper fit, and is proof against steam cuts, which causes the valve to become leaky and practically useless, so that an engine would act as well if it had no governor at all. The market is *well* supplied with *cheap* governors, with valves and seats of the softest description of cast iron, which in some localities will not bear use six months, and which will not last long in any place. Such governors are in reality the most expensive in the end, and eventually must be replaced by others. The valves and seats in this governor are all hardened, and will resist steam cut for a long time. The water in some localities requires composition valves and seats, which can be furnished, if ordered.



# Hear's Illustrated Catalogue of

## Bucket-Plunger Steam Pumps.



Sectional View.

The operation of the pump above illustrated is as follows: The several chambers or passages being full of water, and the bucket, B, being at its upward stroke, the water through the lower or induction valve will, of course, have filled the water cylinder, F, while the water which had previously entered the pump cylinder above the upper surface of the bucket, B, was forced back through the valve chamber and out at the discharge, G,—this being only equal in quantity to one-half of that drawn in through the induction valve during the upward stroke of the pump-piston, owing to the reduced area of the upper annular face of the plunger as compared to the lower face of the latter. This water from above the pump-piston, or bucket, passing through the valve chamber, to the air-chamber, escapes therefrom to and through the outlet-pipe at the bottom. On the return or down stroke of the plunger, the water under the same in the pump cylinder is forced (the inlet valve closing) up through the outlet valve into the valve chamber, from which one-half of the water thus drawn in by the up stroke passes into the pump cylinder above the piston, while the other half is forced into and through the air chamber to the outlet pipe. It will thus be seen that the pump, although drawing in water only during its upward stroke, discharges it during both the up and down stroke, one-half of the entire quantity being expelled at each stroke. The following table gives the dimensions of the different sizes, etc.:

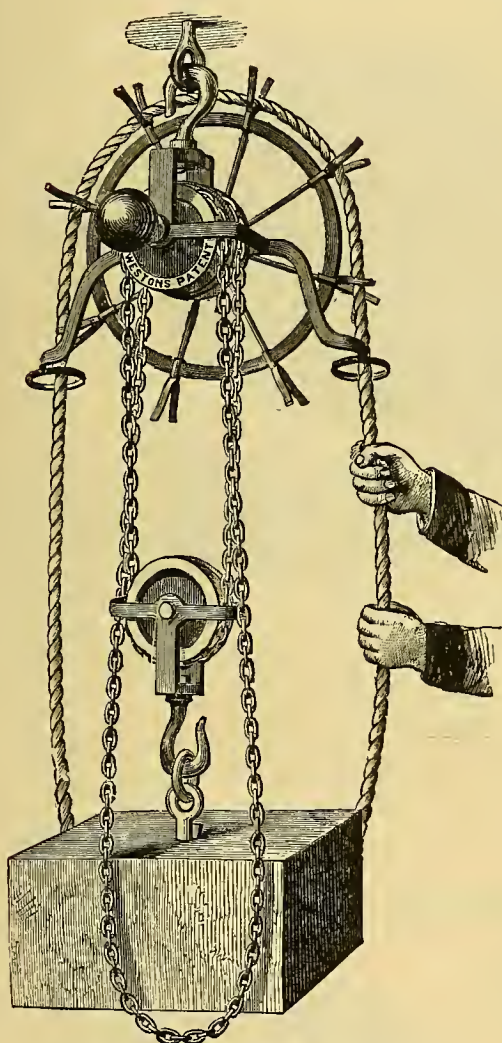
Numbers,.....	0	1	2	3	4	5	7	9
Diameter of steam cylinder, in inches,.....	4	5	5½	7	8	10	12	14
Diameter of pump cylinder, in inches,.....	2½	2¾	3½	4½	6	7	8	10
Capacity per revolutions, in gallons,.....	.04	.07	.10	.18	.49	.67	1.30	2.04
Boilers in horse-power they will supply,.....	15	25	40	80	150	200	400	600
Size of steam pipe, in inches,.....	¾	1	1½	2	2½	3	4	5
“ exhaust pipe, “.....	½	¾	1	1½	2	2½	3	4
“ suction pipe, “.....	1	1½	2	2½	3	4	5	6
“ discharge pipe, “.....	¾	1	1½	2	2½	3	4	5
Length over all, in feet and inches,.....	1.3	1.6	1.10	2.1	2.5	2.10	3.6	4.6
Height over all, in feet and inches,.....	2.3	2.7	2.10	3.1	3.11	4.2	5.6	5.8
Width (diameter balance wheel),.....	1.2	1.4	1.5	1.10	2.3	2.8	3 ft.	3.4
Weight of pump, in pounds,.....	145	245	320	490	840	1096	1850	2700

In ordering, please state what duty the pump is required to perform, giving size and length of supply and discharge pipes.



# Wood and Iron Working Machinery.

## Patent Differential Pulley Blocks.



No. 1, with Sprocket Wheel.



No. 2, without Sprocket Wheel.



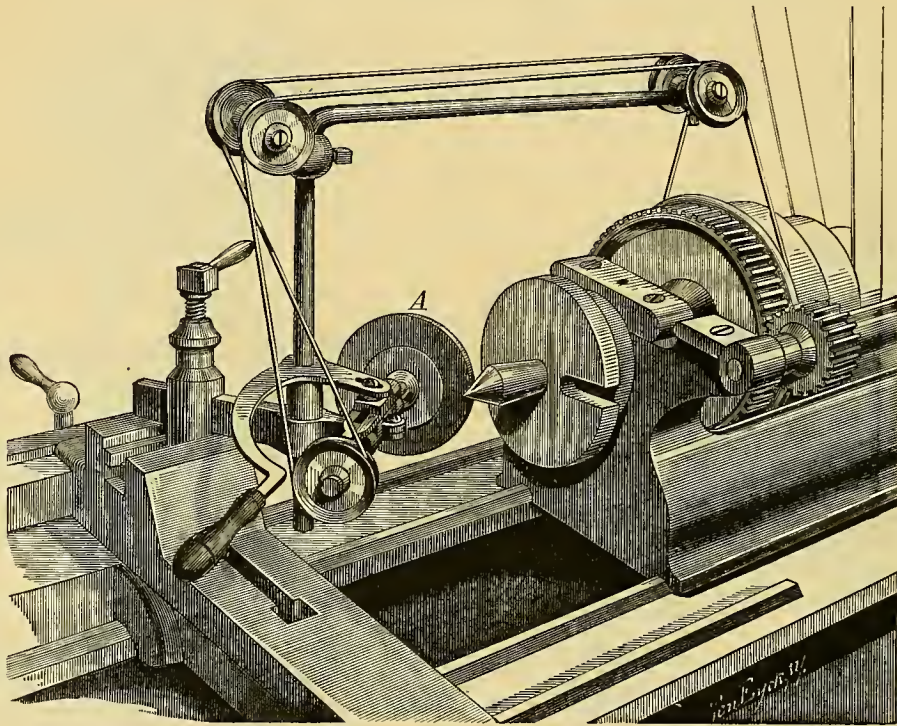
No. 3, without Sprocket Wheel.

The peculiar merit attached to these pulleys is, that while they are more powerful than ordinary pulley blocks, they also possess the novel and invaluable quality of not "running down," under any circumstances, while the load is suspended to them. Wherever weights have to be lifted, this hoisting tackle will be found to be invaluable. When worked from below by pulling the chain, about four times the length of lift is required.



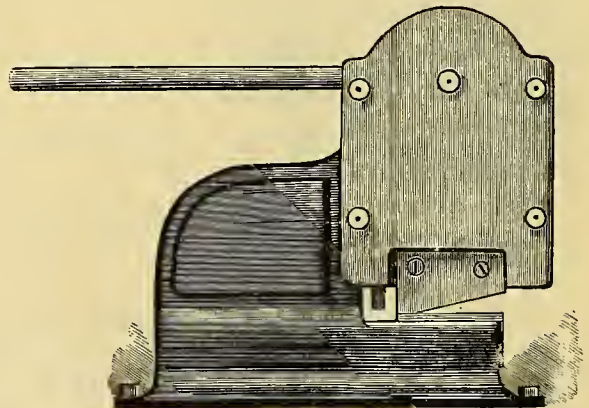
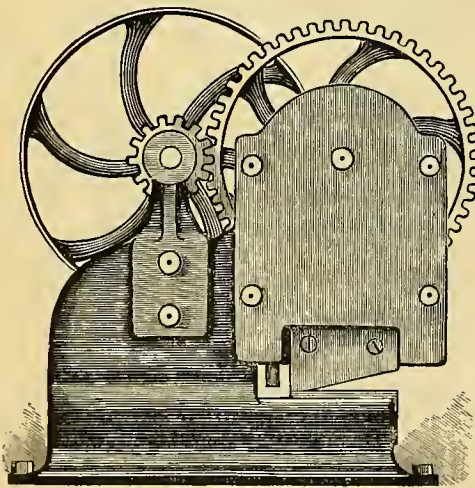
# Gear's Illustrated Catalogue of

## Attachment to an Engine Lathe,



For Grinding Centers.

## Shearing and Punching Machine.



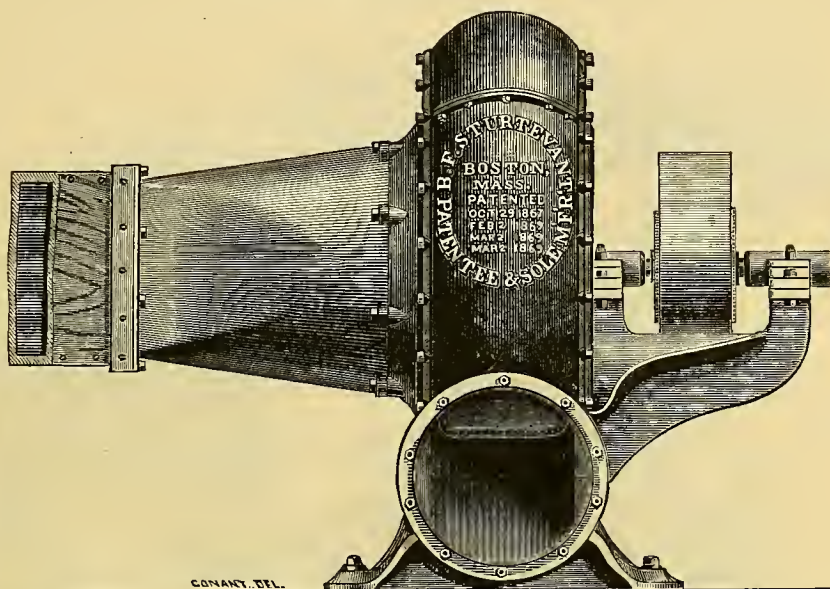
The above illustration represents a Shearing and Punching Machine. There are two sizes. The No. 1 machine will cut iron  $\frac{1}{4}$  inch thick, will punch iron 3-16 inch thick, and cut round iron  $\frac{3}{8}$  inch diameter. The No. 2 machine will cut iron  $\frac{3}{8}$  inch thick, will punch iron  $\frac{1}{4}$  inch thick, and will cut round iron,  $\frac{1}{2}$  inch diameter.

SOME OF THE ADVANTAGES OF THIS MACHINE.—By removing the punch and bed piece, you can cut sheet iron any length or width you wish. It is a machine of great power in small compass. It can be attached to any bench where convenience may require. You get two machines combined, for the price of one.



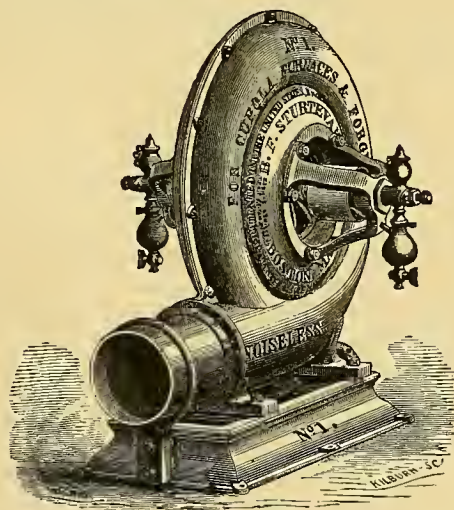
# Wood & Iron Working Machinery.

## Exhaust Fan,



For removing shavings from planing and moulding machines, saw-dust, and dust from sand wheels, such as are used for polishing lasts, carriage spokes, shoe bottoms, felt hats, &c., and emery wheels for polishing all kinds of hardware; smoke and gas from smoky smiths' shops and manufacturing establishments and chemical works; steam and vapor arising from paper machines and all drying cylinders and dry-rooms; also, sweat from mill stones, offensive odors from try-kettles and dyeing establishments; dust from rag and cotton pickers, flax and rope machinery, and for ventilation of coal mines and all under-ground apartments or cellars.

## Patent Improved Steel Pressure Blower,

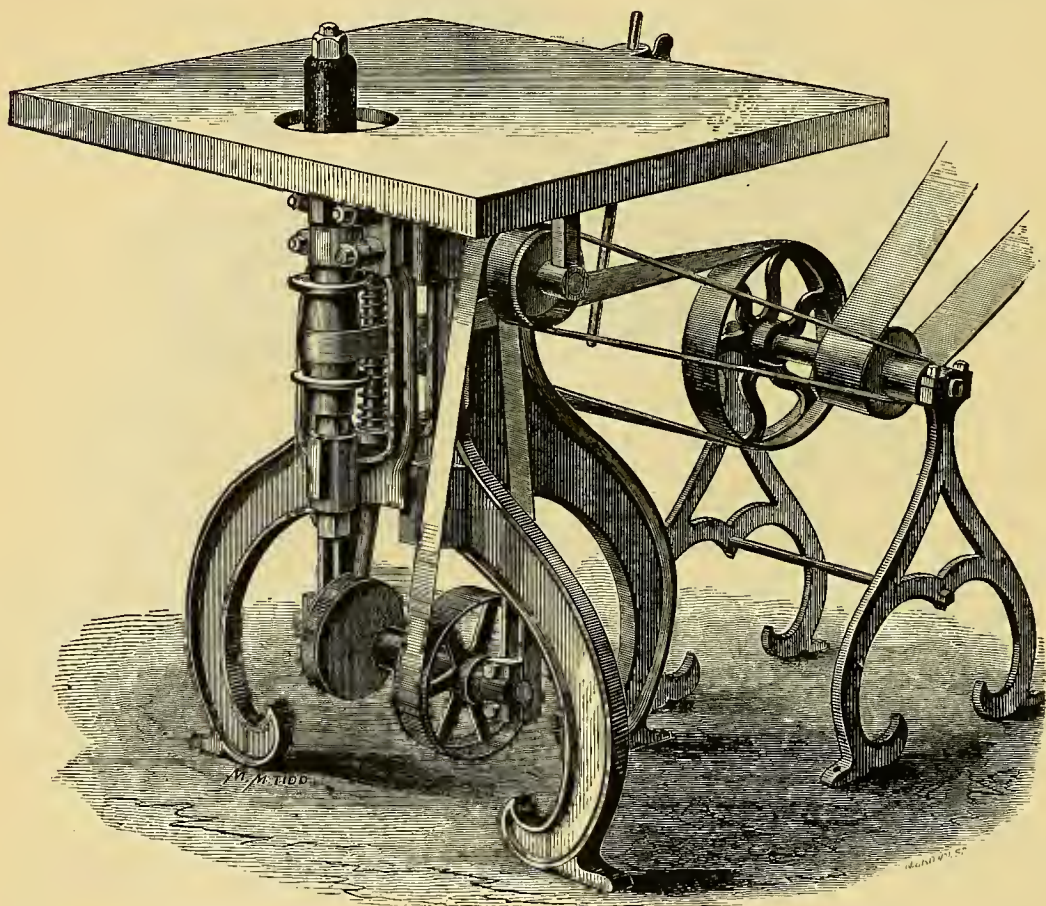


For Cupola Furnaces and Forges.



# Gear's Illustrated Catalogue of

## Gear's Universal Emery Grinding Machine,



For Grinding, Shaping and Finishing Straight, Irregular, Moulded and Beveled Iron Work  
with the use of Emery Wheels.

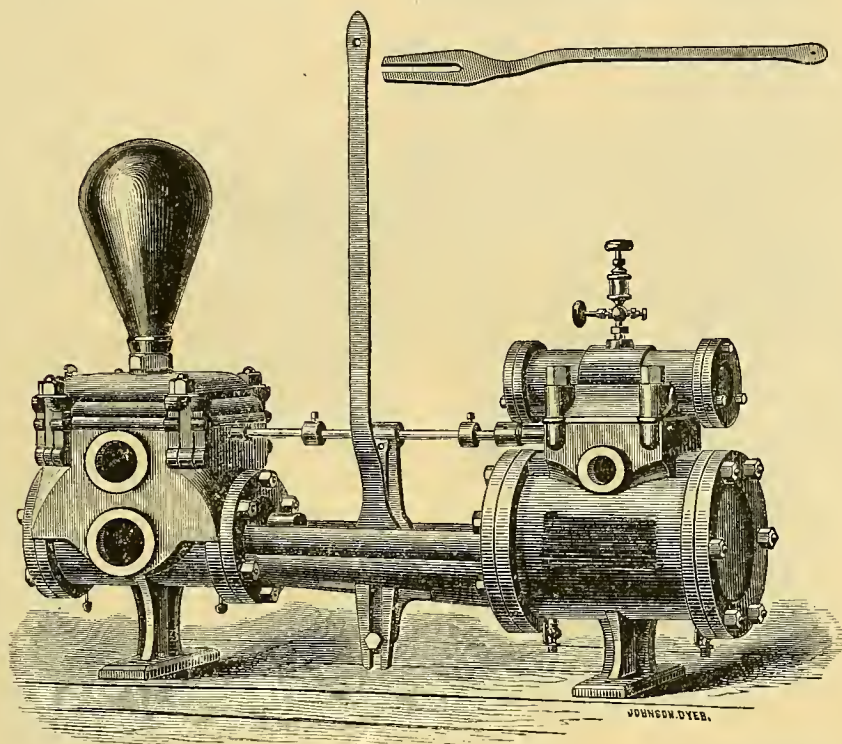
PATENTED APRIL 23, 1872.

This new and useful machine we have constructed and now offer to the manufacturers of this country, knowing that there was need of some method for forming and finishing moulded and plain, irregular and straight iron work. How far we have succeeded we are willing to let the manufacturers say. But that we have them in use where they would not dispense with them if prevented from obtaining another *we do know*. The machine is simple and somewhat different from all other grinders. With its reciprocating and rotating motion combined, it cuts much more rapidly, and has in that the *true principle* of a drawing or shearing cut. This principle, whether applied to sharpen the cutting edges of planer knives on grindstones, or cutting with keen edges of a file or emery wheel, all mechanics will understand. The table and spindle are adjustable and can be set to accommodate any angle or bevel. Stove foundries and machinists should have this machine. We want you to have one. We know you will be pleased with it, and that you ought not and cannot profitably dispense with its use. Shall we be favored with your order? Will you please look into the matter and see how much can be saved by having one? Think of the almost endless variety of work that you can do on it, and how much it will enable you to reduce your expense for files and labor. Remember, "it is not what we *make*, but what we *save*, that makes us rich."



# Wood & Iron Working Machinery.

## Steam Pump for Feeding Boilers,



Of Forcing Water under Heavy Pressure, with Hand Power Attachment from No. 0 to No. 6.

There is no longer any question as to the most economical manner of feeding boilers. It is to supply a steady flow, equaling exactly the evaporation. A pump capable of supplying one hundred horse-power boilers may be run so slowly as to supply the exact quantity of water evaporated by a one-horse boiler. Practical engineers will appreciate this feature. These pumps are arranged in two different styles, one for cold water, the other for hot water. When both hot and cold water are to be used, order the hot water pump.

Number,.....	0	1	2	3	4	5	6	7	8	9	10	11	12
Diameter of steam cylinder,.....	3½	4	4	5½	6	7½	8	10	12	14	16	18	20
Diameter of water cylinder,.....	2½	2½	2½	3½	3¾	4½	5	6	7	8	9	12	14
Stroke,.....	3	3½	5	7	7	10	10	12	12	12	18	24	24
Gallons per stroke,.....	0.046	0.074	0.106	0.251	0.334	0.688	0.850	1.468	1.953	2.611	4.957	11.740	15.990
Strokes per minute.....	1 to 400	400	350	300	300	250	250	200	200	200	150	100	100
Steam pipe, .....	¾	1	1½	2	2½	3	3½	4	5	6	8	10	12
Exhaust pipe, .....	¾	1	1½	2	2½	3	3½	4	5	6	8	10	12
Suction pipe, .....	¾	1	1½	2	2½	3	3½	4	5	6	8	10	12
Discharge pipe, .....	¾	1	1½	2	2½	3	3½	4	5	6	8	10	12

Larger sizes of various proportions of steam to water cylinder, and of any desired capacity, to order. When ordering a pump, please answer the following questions. 1—To what service is it applied? 2—The quality of the liquid to be pumped—whether salt, fresh, acid, clear or gritty, and is it to be pumped cold or hot? 3—To what height is it to be lifted by suction, and what is the length of the suction pipe? 4—To what height, or against what pressure, is the water to be forced? 5—What is the greatest quantity of water needed per hour? 6—What pressure of steam is used? For brass pumps, the difference is in the cost of metal extra.

The utility of a pump with Hand Power Attachment will be seen at once, as the pump can be used, when steam is down, for filling boilers, washing decks, fire purposes, and to do general pumping. When the pump is being operated by steam, the hand lever can be removed simply by lifting it from the pin on which the fork rests. Each pump has suction and delivery openings on both sides this makes it very convenient, as connections can be made on either side of the pump desired.



## Patent Lever Dynamometers.

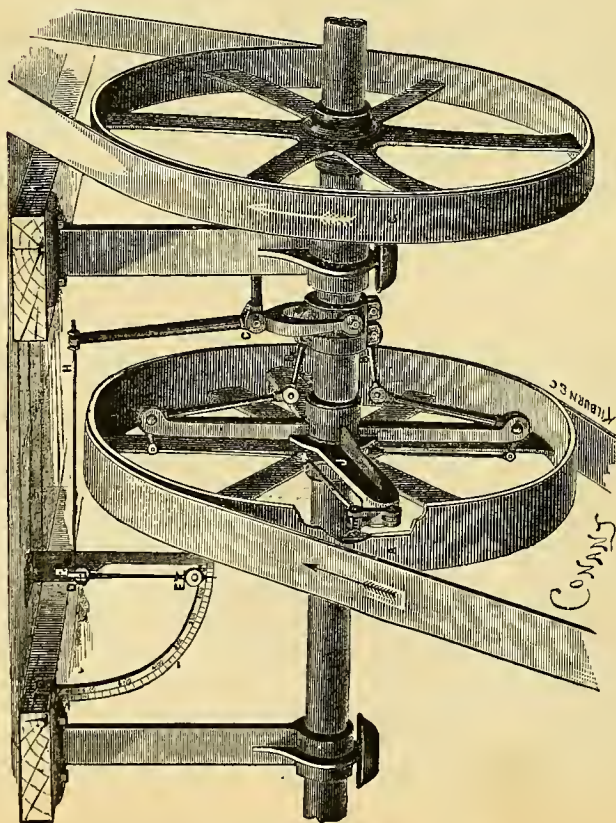


Figure 1.

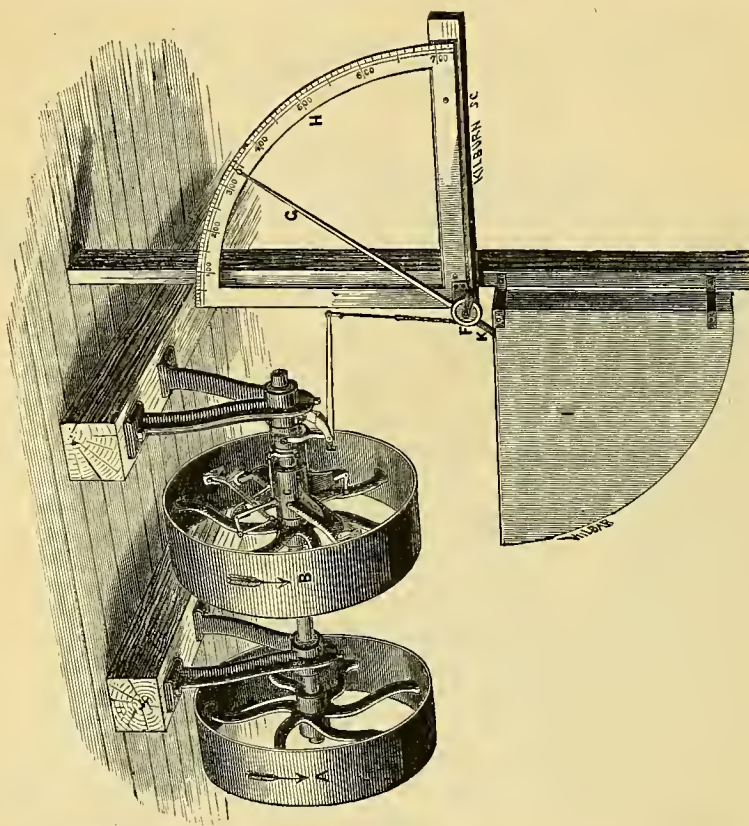


Figure 2.

The object of a Dynamometer is to measure power, as its name denotes. Mechanical power is as much an article of commerce as any material or appliance for our necessities and comfort; but while everything that is bought and sold (except power) is accurately weighed, gauged, or measured, the amount of operative force or power has been for years left to shrewd guesses or rough calculations. Of course, all such guesses, conjectures, and even calculations, are so at variance with the notions of different individuals, that they are rarely satisfactory and never absolutely correct. The machines represented on this and the following page completely obviate all these difficulties. They actually weigh all the transmitted power, whether sent through the medium of a fall or pressure of water, the action of a steam engine, through shafting or belts or gearing, so that the power transmitted may be ascertained to a nicety. It can be tested by the sealed weights, held in trust by all city and town authorities, as readily as can a Fairbanks scale. In fact it is built on the same principle of gravitation or weight. The invention is a simple machine, having no springs liable to be affected by the changes of temperature or the extremes of tension, but is simply a weighing machine like a platform scale. [For description, see next page.]



## Patent Lever Dynamometers.

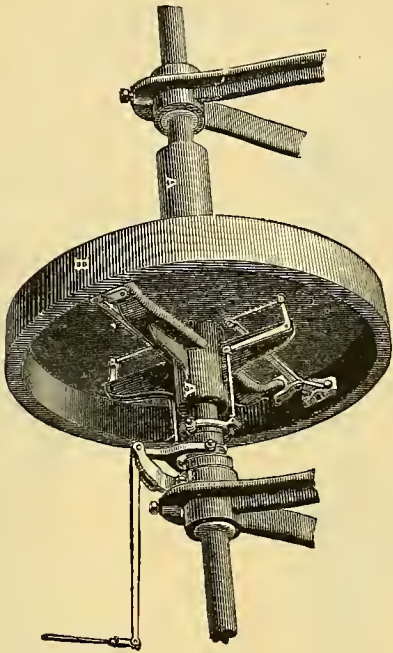


Figure 3.

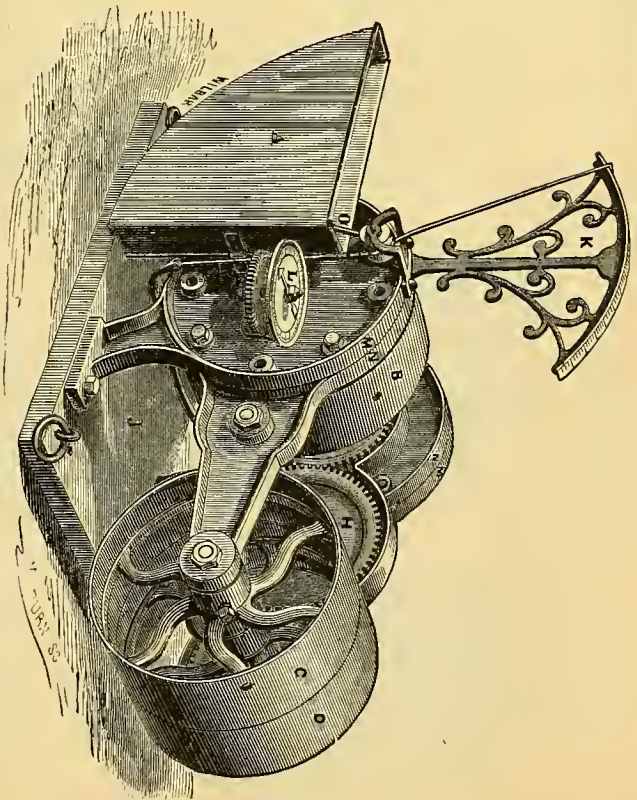


Figure 4.

Figure 1 (p. 122) represents a permanently attached power measurer. The pulley, A, is loose on the shaft, and receives the power. Its connection with the shaft is made by means of a wheel (the spider, J), keyed or screwed firmly to the shaft in close contiguity with the receiving pulley—its hub, in fact, forming one of the guides to the position of the pulley on the shaft. To connect this fixed wheel with the loose receiving pulley, a bell crank lever is pivoted into projecting ears on the rim of the wheel on opposite sides, the long arm of which connects with an annular slotted collar on the shaft by means of the short bars, B. The short arms of the bell crank levers connect on the inside of the fixed wheel with two radial bars, one parallel to the outer arm of the bell crank, and the other at right angles to it, receiving, near its upper end, a pivot passing through a swivel hung to the rim of the wheel, and having its extreme end pivoted to a stud fixed on the inner side of the rim of the receiving pulley. The strain of the power received through the belt on A, necessarily reacts on the levers, and through them, on the fixed wheel, which may be considered nothing more nor less than a support to these levers in sustaining them in position to connect the loose receiving pulley with the shaft. At B, the levers are connected by pivots with the sliding collar, in the annular groove of which is seated a strap with which is connected a forked lever, the fulcrum at C. To the end of the long arm of this lever, a rod, with a short section of machine chain, is attached. The chain runs over the cylindrical head, D, of a pendulum weight, E, having a pointer that traverses a fixed quadrant, F, properly divided by a scale to denote the relative pressure exerted through the medium of the receiving pulley on the shaft. The pulley, G, is fixed to the shaft, and delivers the power. The permanent dynamometer can be made to test any amount of power, and can be adjusted to all sizes of pulleys.

Figure 2 (p. 122) represents a Portable or Stationary Dynamometer, which can be made to test any amount of power, and can be adjusted to all sizes of pulleys. It is placed at the joint in the shaft, and the coupling removed. It is fitted to any size of shafting, and can be made to test any amount of power.

Figure 3 represents a Dynamometer applied at the coupling of a shaft. It is placed at the joint in the shaft, and the coupling removed. They can be fitted to any size of shafting, and can be made to test any amount of power.

Figure 4 represents a Portable Dynamometer, which are made of different sizes. They are useful for testing pickers, looms, spinning frames, or any kind of machinery, by being placed between the machine and motor, connected by belts on its pulleys.



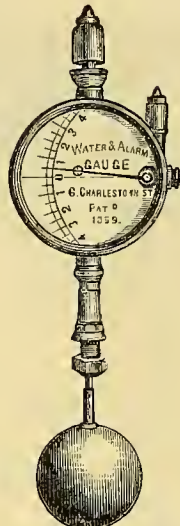
# Gear's Illustrated Catalogue of

Water Gauges.

Lane's Low Water and Alarm Gauges.



No. 2, Globe or Valve Pattern. No. 2, Cock Pattern.

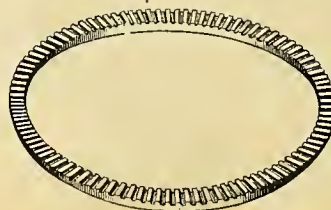
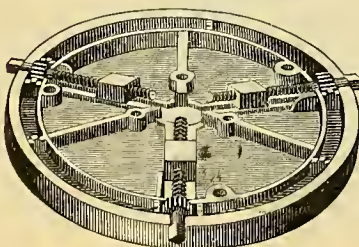
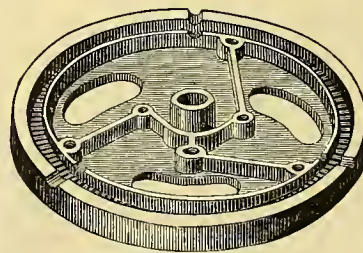
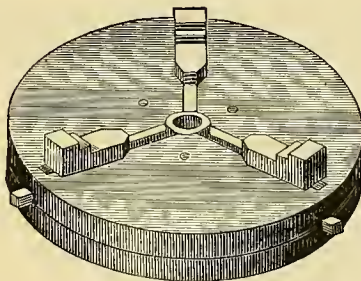


Column Gauge.



Cylinder Gauge.

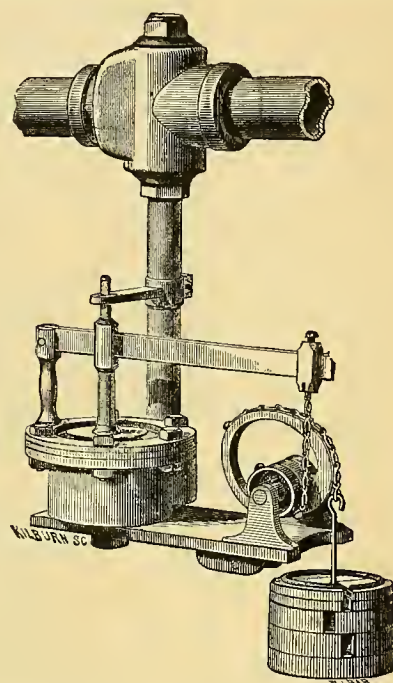
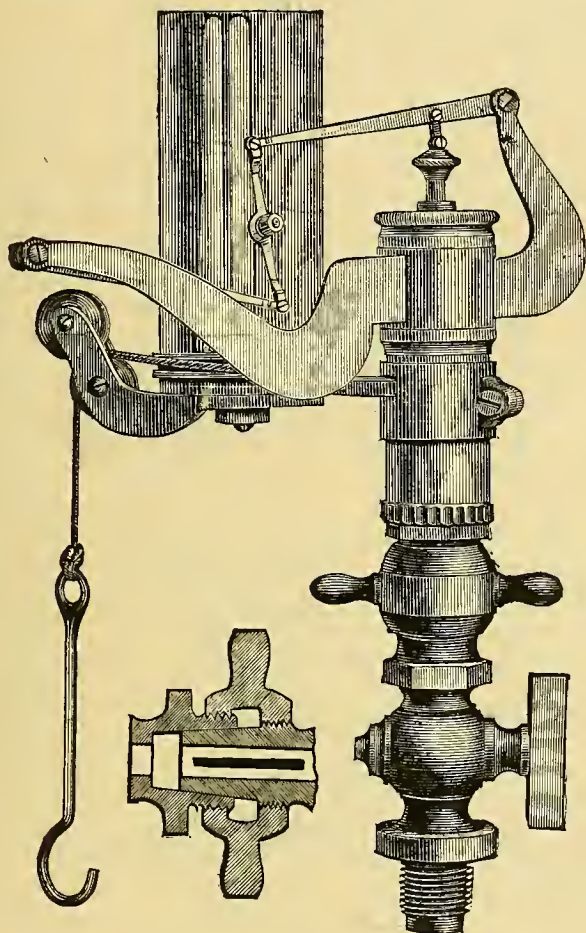
## Patent Geared Scroll Chuck.





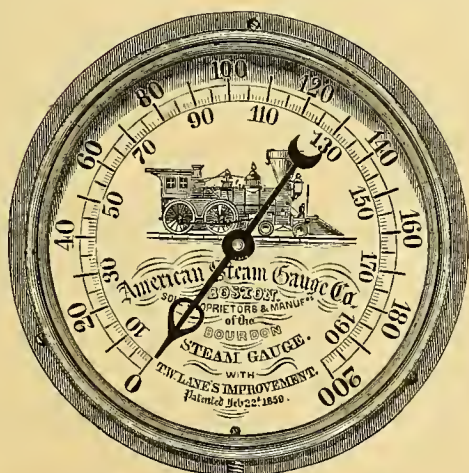
# Wood & Iron Working Machinery.

Parallel Motion Indicator. Improved Steam Pressure Regulator.

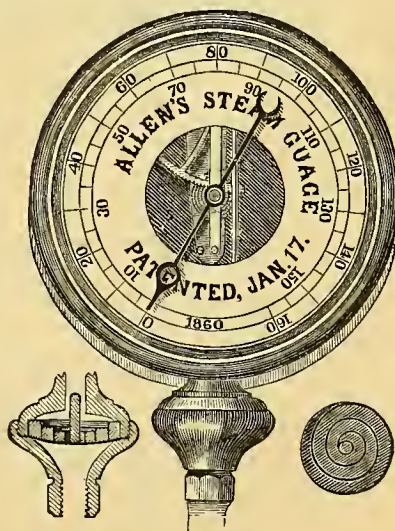


This regulator is designed to reduce and control the pressure of steam as used for various purposes in manufacturing and steam-heating, and is claimed to be especially adapted to paper dryers, English can-dryers, slashers, &c., and is being adopted and approved wherever it is desirable to regulate the pressure of steam.

## Steam Gauges.



Bourdon, with Lane's Improvement.



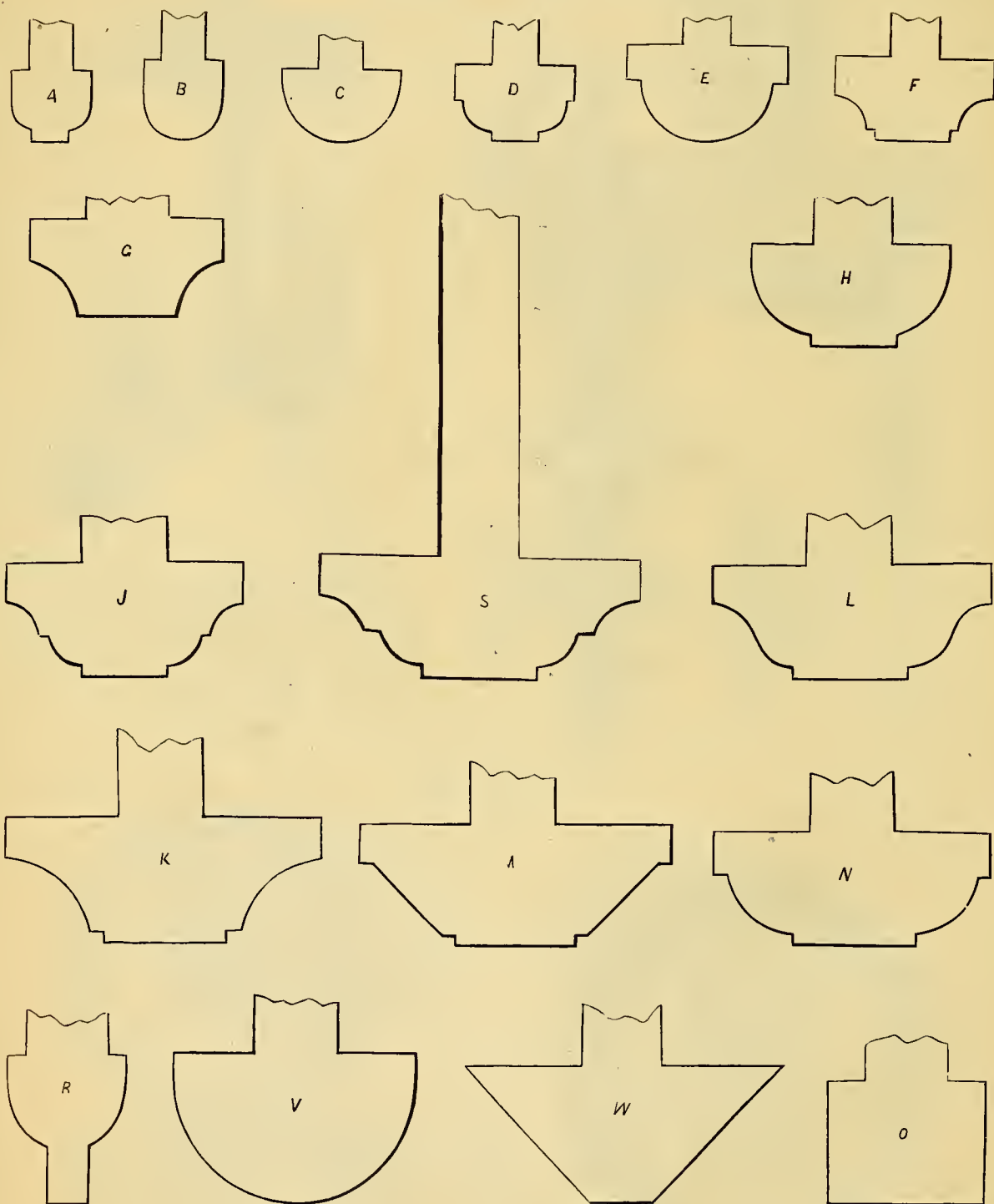
The Allen Gauge.

The principle of the "Allen's Patent" Steam Gauge is perfectly simple, and entirely free from the objections which exist in every other *protected* Spring Gauge in use. The steam acts upon a tapered volute, or coiled steel spring, which is protected by an elastic diaphragm from a direct contact with the steam.



# Gear's Illustrated Catalogue of

## Cutter's for Gear's New Machine

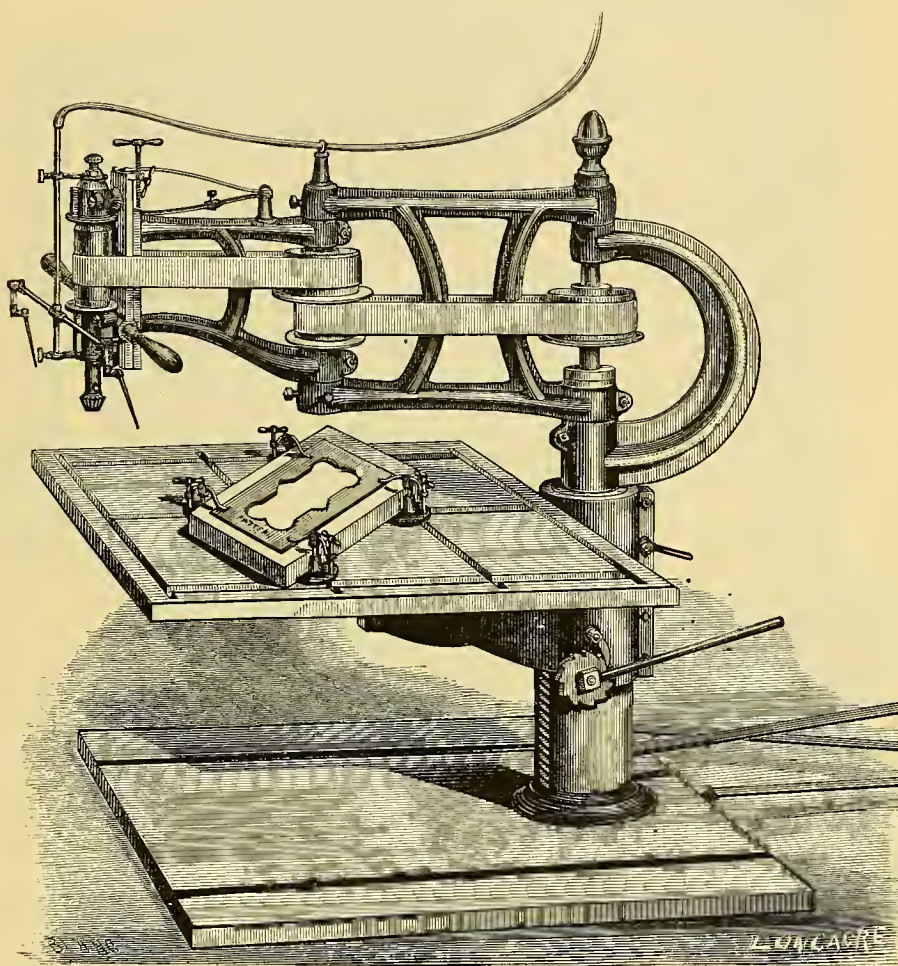


For Paneling, Moulding, Boring, Carving, &c.



# Wood and Iron Working Machinery.

## The Gear Stone Machine,



For Surfacing, making Straight and Irregular Mouldings upon the Face and Edge; Paneling, Lettering, Turning and Carving Granite, Marble, Sandstone, Slate, &c.

### FACTS THAT CANNOT BE DENIED.

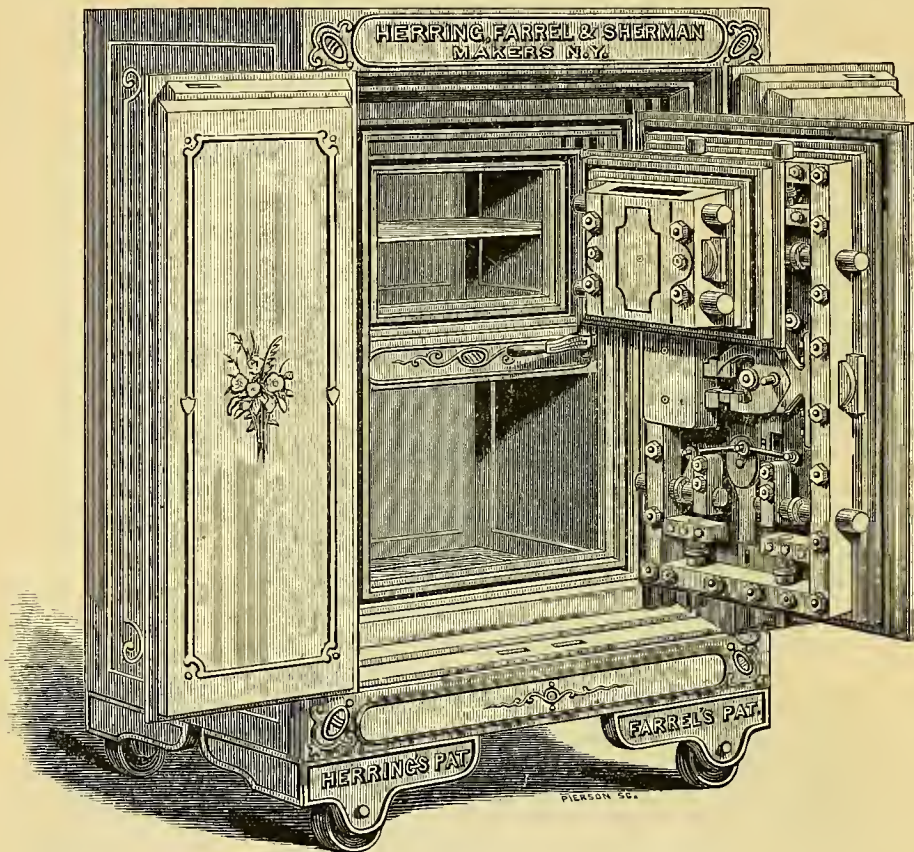
Work can be done in one minute on this machine that will take three hours for one person to do by hand. Calculating labor at forty cents an hour, one machine will earn in one minute \$1.20; in one hour, \$72.00; in one day, \$720.00, which is equal to the work of one hundred and eighty men at \$4.00 per day. Let us deduct from the above number thirty men for changes, and we then have one hundred and fifty men's work per day. Now to get below the possibility of a doubt, let us reduce the number two-thirds more—one hundred men's labor less—fifty men's work: Fifty men's work for one day, at \$4.00 per day, will amount to \$200.00; for one week, \$1,200.00; for one year, \$60,000.00 Granite can be dressed, moulded and ornamented at an expense of 25 cents per foot, in a manner much superior to the present style of hand-dressing, which costs from \$5.00 to \$6.00 per foot.

Address A. S. GEAR, General Agent for the Gear Stone Machine Company, 56 to 62 Sudbury Street, Boston, Mass.



# Hear's Illustrated Catalogue.

## Herring's Patent Champion Fire and Burglar Safes.



### Proof against the Blow-pipe as well as the Drill.

The most effective tools in the hands of burglars are wedges, nitro-glycerine and gun-powder. The first opens the joints or cracks to admit the latter, and when this is effected the rest is easily accomplished. There are but few safes now made that really give protection against these powerful agents. It is claimed, however, that the Improved Patent Tongue and Groove Lever-hinged Banker's Chest, with packed air-tight joints and flanges, affords this protection; and with the combination of patent "high and low steel steel" welded (Bessemer and chrome cast steel, more than double the strength of welded steel and iron) with the patent Franklinite or Spiegel-Eisen, gives security against the blow-pipe, as well as the drill. These bank safes are made with solid welded angle frames outside, with smooth exterior, and present no cracks or joints that can be affected by the wedge. All the corners are solid, and no joint extends through the chest.

In the safe represented above a strong tongue is fixed all around the door, projecting from its inner surface. A similar tongue is made on the jamb of the safe against which the door closes, and is made to fit inside of the tongue projecting from the inside surface of the door, so as to form a groove or channel all round the doorway to receive the projecting tongue on the door; so that, when the door is closed with the patent hinge, it keys the whole structure, and the sides cannot be made to spring or bulge from the edges of the door, by driving in wedges, or the use of screw-power. In these grooves are placed a Patent Rubber Packing, making an air-tight joint, which prevents the introduction of any liquid combustible, as well as fine powder. Not one of these first-class Banker's Chests have as yet been robbed by burglars, though more are in use, and more have resisted the attempts made upon them, than any other kind. As a drill-proof resistant, they now stand the test better than any combination of materials yet invented, and the manufacturers challenge all competitors, in the sum of one thousand dollars, to produce a safe that will resist the drill and blow-pipe one-half the length of time that our Patent Combination will. With present improvements these safes ensure protection against wedging and sledging, drilling and blowing, and burglars' tools generally, to an extent heretofore unknown. No safes not protected by these modern improvements against wedging are trustworthy.

AS A FIRE-PROOF SAFE the Herring Safe has not only maintained its position in the FRONT RANK, but recent fires have shown it to be very far in advance of all others. In the Chicago fire there were *one hundred and forty-nine* of these safes, and the contents of them all were preserved, and in the Portland and Boston fires there was not a single failure. The patents of S. C. Herring of May 18, 1852, improved and renewed May 18, 1866, and of John Farrel, February 7, 1865, are claimed to produce the most perfect and complete dry safe, for protection against fire, ever offered to the public. Send for circular and prices.



## Please Read Our Record.

The machinery I purchased of you in fitting out the Boston and Albany Car Shops, at Allston, Mass., is giving perfect satisfaction, and I am pleased to recommend all persons desirous of purchasing the best and latest improved Wood and Iron Working Machinery to your house, feeling confident that they will do better, as regards quality and price, than they can in purchasing of manufacturers. A large assortment, collected from all parts of the country, can be seen always at your warerooms.—*W. E. Chamberlain, Master Car Builder, B. & A. R. R. Car Shops, Allston, Mass.*

I beg leave to say that Mr. Chamberlain has charge of our car shops, at Allston, and in my judgment his recommendation is entitled to great confidence and respect.—*A. Firth, Asst. Supt. B. & A. R. R.*

We have given your improved Jig Saw a thorough trial, and find that it is all you recommended. It saws very rapidly, doing its work well, and runs quietly, without jarring, or shaking the building. We cheerfully recommend it as the very best Jig Saw we have ever seen.—*Dutton & Campbell, Fisherville, N. H., Manufacturer of Furniture Carvings.*

The machines we bought of you give us entire satisfaction. You will remember we made it a specialty in a Planer that it should plane very thin stuff rapidly and well. The first piece planed—a piece of hickory elm, very tough and grain-wavy or interlocked—I planed down to one-half inch in thickness, leaving it perfect every way.—*Wabash Valley Manufacturing Co., Antioch, Ind.*

The machines bought from you give us entire satisfaction. *Dixen & Johnson, Savannah, Ga.*

We have used your Jig Saw for two months, and like it well. It gives us good satisfaction, and we think it all you recommend. *Clark & Giddings, Peabody, Mass.*

The machinery I have had of you gives entire satisfaction. I am satisfied that no one can do business successfully without the best of machinery, such as may be obtained at your warerooms.—*C. H. Smart, Centre Ossipee, N. H.*

I have a Tenoning Machine which I purchased of you. It is the best tenoning machine I ever used. It does its work clean, and smooth, and after being adjusted, is always in place. In fact, it gives perfect satisfaction in every respect.—*M. W. Collins, Enfield, N. H.*

I have been using one of your Variety Moulding Machines for more than five years. It has never failed to give perfect satisfaction. I am much pleased with the Jig Saw that I bought of you last winter, and would not exchange it for any other that I have ever seen.—*M. C. Wadsworth, Gardiner, Me.*

The machinery which we purchased of your house is working nicely, and gives entire satisfaction. We shall be happy to recommend your house to all who wish to purchase machinery or supplies. *Amidon Manufacturing Co., Miller's Falls, Mass.*

Your machinery gives good satisfaction, and we shall take pleasure in recommending all in want of first-class machinery of any description to visit your warerooms.—*Cushing & Southworth, Stoughton, Mass.*

We wish to say to you that we are perfectly satisfied with the machinery purchased of you, and price, the price being as low, and in some cases, lower, than we get from manufacturers themselves, and we are glad to know there is a place where any one can get all kinds of machinery made, without the trouble of looking up manufacturers when they are at a distance; and we would cheerfully recommend any one wanting machinery to call at your house for prompt and satisfactory attention.—*E. & J. C. Barnes & Co., Plymouth, Mass.*

After visiting manufacturers and obtaining their terms and prices, we found it every way to our interest to purchase of you. Your acknowledged mechanical skill, your independent position in regard to different makers, your judgment as to the best machine for the purpose required, the great convenience of finding all first class machines, side by side, where their respective merits could be accurately compared, and your kindness, have given us abundant confidence to send you our thanks and our commendation.—*Porter Blanchard's Sons, Concord, N. H.*

The Jig Saw we purchased of you gives entire satisfaction. We are much pleased with its operation, and take pride in showing it to others.—*Nourse, White & Co., Westboro', Mass., Manufacturers of Garden and Veranda Trellises, &c.*

The Balanced Jig Saw, and other machinery we purchased of you last Spring, meets our expectations in every respect, and we are very much pleased with it.—*Ashton & Butman, Taunton, Mass.*

We find the machinery purchased from your house gives entire satisfaction.—*James Griffith and Son, Cincinnati, Ohio.*

The machinery furnished by you, works to our entire satisfaction, and it gives me pleasure to say, that I think your house is just the kind of an institution that the community require, and ought to encourage and sustain.—*Lewis C. Tower, Gloucester, Mass.*

The Planer (30 inch knives) sold us by you, gives perfect satisfaction, doing its work better than anticipated, and it gives us great pleasure to say that all the machinery which we bought of you fully meets our expectations. You may rely on our custom whenever in need of any thing in your line.—*C. F. Packard & Co., Waldoboro', Me.*

Having had considerable dealing with your house, I cheerfully testify to your general promptness and honorable business management.—*Weetmoe Mills, Fall River, Mass.*

We are very much pleased with your Variety Machine sent us some months ago. We appreciate your house, where manufacturers can obtain all sorts of machinery with little trouble.—*Larkins & Bishop, Manufacturers and Dealers in Lumber, New Haven, Conn.*

We take pleasure in saying that in all the dealings we have had with you, you have acted in a strictly honorable way. The machines furnished us have been all you have represented, and when we have need of other machinery, shall not fail to apply to you to procure it for us. We believe your way of selecting from different makers their best machines is the only true way to supply a shop with first class machinery.—*Jno. Safford & Sons, Morrisville, Vt.*

We think the peculiar feature of your house (that is, of being able to supply any one with any kind of a machine) a great advantage to all who wish to purchase machinery of any kind.—*Rolfe, Tyler & Co., Commission Lumber Merchants, Burlington, Vt.*

We have a Planer from your establishment which gives us satisfaction.—*John K. Rogers, Agent, Boston Type Foundry, Boston, Mass.*

The different machines you have furnished the consolidated Wax Thread Sewing Machine Company, during the past year, have given entire satisfaction, and we take pleasure in recommending your house to all parties desiring machinery of any kind.—*L. H. Straw, Treas., W. T. S. M. Co., Boston, Mass.*

All the machinery and supplies purchased of you give us perfect satisfaction.—*C. L. Taft, Manufacturer and Builder, Fitzwilliam, N. H.*

With your Dovetailing Machine I have reduced the cost of drawer cases and the like, 20 per cent., giving at the same time a neater and much stronger job. Until you established your ware-rooms in Sudbury Street, there has been no way for one to arrive at the merits of the machinery manufactured by different houses, except to go to the different shops, which oftentimes would involve considerable expense.—*J. C. Hosmer, Foreman J. A. Robertson's Mill, Boston, Mass.*

I cordially recommend your services and manner of furnishing the best machinery produced, regardless of its maker, as VALUABLE, and every way worthy the consideration of all purchasers.—*M. C. Andrews, M. M. Car Department, N. Y. and N. H. R. R. Co., New Haven, Conn.*

The character of the machinery your house has furnished to this Company, in all respects, has given complete satisfaction, and the Moulding, Paneling, Carving and Dovetailing Machine is justly regarded as a most remarkable invention.—*J. R. Watson, Purchasing and General Supply Agent, Central Pacific R. R.*

Being in want of a machine for planing wood to a perfect even thickness, for the purpose of mounting our electrolyte plates, we applied to you, and in your Wood Planer we found just what we wanted. We consider that it has more than paid for itself in the six months we have used it, and it has given us the greatest satisfaction.—*Stark, Stanley & Co., Electrotypers, Boston, Mass.*

This Company has one of your Paneling, Dovetailing, Carving and Boring Machines, and it is with pleasure that I inform you that it gives complete satisfaction, performing the work in No. 1 order and with great dispatch.—*Geo. W. Perry, M. & M., Philadelphia, Wilmington and Baltimore R. R. Co., Wilmington, Del.*

The machinery purchased of you works to our perfect satisfaction. The Band Saw machine is pronounced by all who have seen it work, the best in the market. We shall be pleased to recommend your house to all wanting machinery, and can assure them of being dealt with fairly.—*Pease, Steele & Co., Lumber Merchants, Thompsonville, Conn.*



The Engine and Lathe I obtained of you, last December, proves to be all you recommended. The Cross Feed and new Tool Block, I could not dispense with, unless I could replace them. Neat, simple and entirely reliable throughout, I could not ask for a better made tool.—*A. M. Dexter, Mattapoisett, Mass.*

The Variety Moulding Machine and the Scroll Saw which you supplied me with, have now been running for several months, and give entire satisfaction. I believe them the best articles for the purposes for which they are used of any that could be obtained in the country.—*Charles P. Stevens, Baltimore, Md., Manufacturer Cabinet Furniture.*

We have to thank you for the prompt manner in which our order for machinery, &c., was filled—all giving the greatest satisfaction. A house of your kind has long been required, where a man can supply himself with any kind of a machine he may fancy at less than manufacturer's prices.—*T. W. Currier & Co., Ottawa, Ca., Manufacturer of Doors, Sash, Blinds, Mouldings, etc.*

The machines I have purchased of you give entire satisfaction and work to a charm. I have every confidence in you, and would heartily recommend you to all manufacturers desiring any style of machinery. Your promptness and energy in furnishing me was very gratifying.—*Thomas S. Hudson, East Cambridge, Mass.*

We have great pleasure in testifying that, after the fair trial we have given all your machines and supplies, we consider them equal to the name they have so deservedly merited, and that they have given us universal satisfaction. We shall have much pleasure in recommending your house for very superior machinery of all kinds, and will be always proud to see shops fitted up with machines bearing the name "Gear."—*Peabody & Crangle Bros., Calais, Me.*

The Machine Bits that I purchased of you have given perfect satisfaction.—*James H. Marsh, Chair Manufacturer, Lincolnton, N. C.*

It gives us pleasure to say that all machines and supplies furnished by your house have given good satisfaction and have proved equal to your recommendation.—*Gregg, Steele & Co., Lawrence, Mass.*

The Bucket and Plunger Pump you sent me, works well. I think it is the best pump in use.—*N. L. Barrett, W. Townsend, Mass.*

We are pleased to report complete satisfaction with the machinery purchased of you last Fall. The system of business, alone adopted by your house, of furnishing all kinds of machinery at manufacturer's prices, should commend itself to all who want the best without regard to maker. Under this system, buyers may avail themselves of the best experience, and save much time and perplexity in selecting.—*Hopkins, McDonald & Co., Ellsworth, Me.*

After giving your Dovetail Machine a three months' trial, and using it daily, we find that it does good work, stronger than hand work when done up, and perfectly satisfactory.—*Daniels & Harrison, Furniture Manufacturers, Boston, Mass.*

The Milling Machine bought of you has given good satisfaction, and should I want any more machinery, should be pleased to give you my orders.—*John J. Grant, Superintendent Cooperative Machine Co., Greenfield, Mass.*

We bought nearly all our machinery of the firm of A. S. Gear, of Boston, and were we to buy again we should buy of them, and for the following reasons: 1st. They are reliable, responsible and honorable in their dealings. 2d. They keep nothing but first class machinery. 3d. Every machine sold by them is fully warranted as represented. Finally, we say, give them a call, before you buy. Their assortment is very extensive.—*Morrisville, Vt., Mfg Co.*

The machinery we purchased of you is all that can be desired. Your house, and the manner of conducting business is new, and of inestimable value to producers and users of machinery.—*J. H. Smith & Co., Bangor, Me.*

Your immense warehouses, your interest to purchasers, your impartial manner of furnishing any and all machinery and supplies, and your judgment of what one needs, cannot be too highly appreciated.—*Moore & McCauseland, Gardiner, Me.*

The machinery supplied by you at different times has met all my requirements, and gives universal satisfaction.—*Joseph L. Ross, Manuf. of School and Church Furniture, Boston, Mass.*

I shall take pleasure in recommending your house to any one wishing to purchase machinery of any kind as one where they can obtain the best, and rely on your representations.—*Elisha T. Jenks, Middleboro', Mass.*

We are happy to acknowledge the fact that all the machinery we have purchased of you has been fully up to your recommendation with regard to it, and that we are every way satisfied with our several purchases.—*Kenyon, Drown & Co., Pawtucket, R. I.*

The justly famous Balanced Jig Saw is the best saw in the market, with no exception. We run it through four inch white oak, using large saws, and we also saw brackets, using saws less than one-eighth of an inch, very rarely breaking a saw.—*Snow & Graf-ton, Augusta, Me.*

This is to certify that I have had in use in the Philadelphia & Baltimore Central R. R. Car shops, since August 28th, 1870, one of your Non-Shaking Balanced Jig Saws. I find it to do all you recommend it to do. I am pleased with it, particularly for its simple construction.—*S. D. Danfield, M. M., Chester, Del. Co., Pa.*

The machinery you furnished me with, after six months' trial, has given entire satisfaction. Your house appears to know exactly what manufacturers require, and furnish the best kinds in the market with a promptness scarcely equaled.—*Wm. Lynch, Epiphany, Prov. Quebec.*

If all you have dealt with are as well pleased with your manner of doing business as ourselves, you will soon be under the necessity of again enlarging your quarters. You will surely meet with the most unbounded success; this you richly deserve.—*Olmstead Safety Latch Co., Boston, Mass.*

## What is said of A. S. Gear's Variety Moulding Machine.

The best beyond a doubt.—*Ellis, Britton & Eaton, Springfield, Vt.*

Indispensable—the best made.—*Colby Bros. & Co., Waterbury, Vt.*

Exceeds our expectations.—*Berky Bros. & Co., Grand Rapids, Mich.*

The Machine works beautifully.—*J. Mulligan, Supt. C. R. R. R., Springfield, Mass.*

In fact it exceeds your recommendations.—*V. D. Perry, M. C. B., H. P. and F. R. R., Hartford, Conn.*

We would not do without it if it cost twice the money.—*Shultz & Gobel, Chicago, Ill.*

Works better than we expected.—*A. White & Co., Boston, Mass.*

We like it very much.—*Ira G. Betts, Detroit, Michigan.*

Does all that you claim for it.—*E. B. Gibbs, M. M. St. Louis and I. M. R. R., Mo.*

Delighted with it. Is easily kept in order.—*Springfield, Vt., Toy Manufacturing Co.*

The most useful wood-working machine manufactured.—*Harvey, Morgan & Co., Concord, N. H.*

Has given perfect satisfaction.—*Clement & Cresey, Lawrence, Ms.*

No failure in any part of it. No substitute for it.—*G. Albin & Son, Springfield, Ohio.*

The greatest labor-saving invention of the age.—*E. Ball, Canton, Ohio.*

First-class—works with great rapidity and economy.—*U. S. Navy Yard, Washington, D. C.*

The two you sent us work to a charm.—*Fletcher & Webster, Nashua, N. H.*

We give your machine the preference over all others.—*Cole & Glass, St. Louis, Mo.*

Cannot conceive how it can be improved.—*Arnold and Catlin, Wenona, Mich.*

All it is represented. The best in use.—*George Hacket, M. C. B., C. R. R. of N. J.*

Does an immense amount of work in the best manner.—*Prescott Bros., Concord, N. H.*

All that you claim for it and more I think.—*F. A. Perry, M. M. Cheshire R. R., Keene, N. H.*

Have tried cheap machines, and think men do not understand their business if they try to get along without Gear's.—*Carpenter and Jones, Wells River, Vt.*



## A Partial List of Companies, Firms and Individuals who have favored us with their patronage.

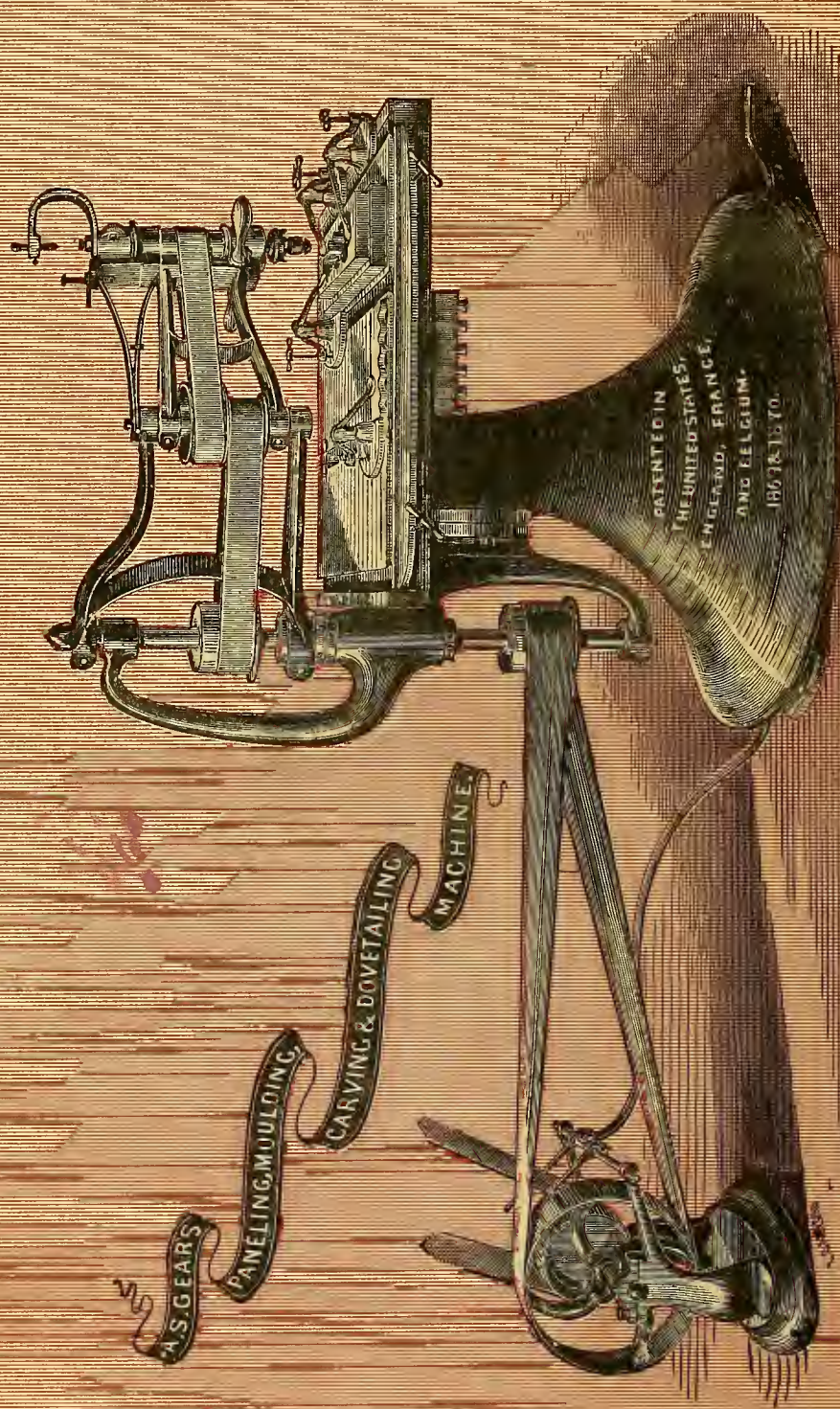
New York and New Haven Railroad Company, New Haven, Conn.  
 Cook, Carpenter & Coleman, Syracuse, N. Y.  
 S. C. Nickerson, Bridgeport, Conn.  
 Sturtevant Manufacturing Company, Lebanon, N. H.  
 Boston and Albany Railroad Company, Allston, and Springfield, Mass.  
 Grand Trunk Railroad Company, Montreal, Canada.  
 William Drum, Quebec, Canada.  
 Hopkins & McDonald, Ellsworth, Me.  
 C. Cooper & Co., Frederickton, N. B.  
 Morrisville Manufacturing Company, Morrisville, Vt.  
 J. Safford & Sons, Morrisville, Vt.  
 Cheshire Railroad Company, Keene, N. H.  
 Arnold & Catlin, Winona, Wis.  
 Saratoga and Rensselaer Railroad Company, Troy, N. Y.  
 Matthew Hennon, Morgantown, West Virginia.  
 International and Great Northern Railroad Company, Houston, Texas.  
 F. Geldowsky, East Cambridge, Mass.  
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 R. N. Walton, Atlanta, Ga.  
 Baltimore and Ohio Railroad Company, Baltimore, Md.  
 New Haven Car Company, New Haven, Conn.  
 Larkin & Bishop, New Haven, Conn.  
 Ransom, Hempey & Co., Cleveland, Ohio.  
 G. W. Woolley & Son, Hartford, Conn.  
 Philadelphia and Baltimore Central Railroad Company, Lamokin, Pa.  
 Boston, Lowell and Nashua Railroad Company, East Cambridge, Mass.  
 Charles P. Stevens, Baltimore, Md.  
 John Benedict, Saratoga Springs, N. Y.  
 M. C. Wadsworth, Gardiner, Me.  
 C. E. Burnham & Co., St. Johns, N. B.  
 William Mason, Taunton, Mass.  
 Montpelier Manufacturing Company, Montpelier, Vt.  
 Chase & Smith, Burlington, Vt.  
 S. D. Mandell, Aurora, N. Y.  
 Crownpoint Iron Company, Crownpoint, N. Y.  
 D. W. Fox, Portland, Me.  
 Fort Wayne Organ Company, Fort Wayne, Ind.  
 Kennebeck Land and Lumber Company, Augusta, Me.  
 Brattleboro Manufacturing Company, Brattleboro, Vt.  
 Grand Rapids Manufacturing Company, Grand Rapids, Mich.  
 A. Stephens & Son, Halifax, N. S.  
 Union Pacific Railroad Company, Sacramento, Cal.  
 Vermont Central Railroad Company, St. Albans, Vt.  
 Pennsylvania Central Railroad Co.  
 T. W. Currier & Co., Ottawa, Canada.  
 Canada Horse Nail Company, Montreal, Can.  
 Carvell Bros., Charlottetown, P. E. I.  
 Gordon & Keith, Halifax, N. S.  
 New York Central and Hudson River Railroad Company.  
 Chicago and Alton Railroad, Bloomington, Ill.  
 Krauss & Bros., Gerysville, Penn.  
 Rolfe, Tyler & Co., Burlington, Vt.  
 Cyrus Wakefield, Boston, Mass.  
 Wason Manufacturing Company, Springfield, Mass.  
 European and North American Railroad Company, Bangor, Me.  
 Grover Bros., Cambridgeport, Mass.  
 Richard A. Hughes, Boston, Mass.  
 American Steam Gauge Company, Boston, Mass.  
 American Needle Company, " "  
 Colcord & King, " "  
 Creese & Noyes, " "

Atlantic Car Company, Salem, Mass.  
 H. P. & I. N. Keith, West Sandwich, Mass.  
 United States Navy Yard, Charlestown, Mass.  
 United States Navy Yard, Portsmouth, N. H.  
 Smith & Wellman, Montgomery, Vt.  
 Boston Chair Company, Boston, Mass.  
 Kenyon, Drown & Co., Pawtucket, R. I.  
 Lovejoy, Smith & Walloch, Calais, Me.  
 La Porte Car Manufacturing Company, La Porte, Ind.  
 Eastern Railroad Company, Salem, Mass.  
 G. F. & J. T. Patten's Sons, Bath, Me.  
 Treat, Lang & Co., Bath, Me.  
 Atlantic, Mississippi and Ohio Railroad Company.  
 Ripley, Howland & Co., Boston, Mass.  
 Orgill Bros. & Co., Memphis, Tenn.  
 F. E. Canda & Co., Chicago, Ill.  
 Bangs, Weston & Co., Bath, Me.  
 J. P. Squires & Co., East Cambridge, Mass.  
 Boston, Hartford and Erie Railroad Company, Readville, Mass.  
 Hinkley Locomotive Works, Boston, Mass.  
 D. L. Lord, East Boston, Mass.  
 Alexander McBee, Greenville C. H., S. C.  
 Boston Car Wheel Company, Cambridgeport, Mass.  
 New York and Harlem Railroad, New York City and Morrisiana.  
 Porter Blanchard's Sons, Concord, N. H.  
 Mt. Washington Railway Company.  
 Highland Street Railway, Boston, Mass.  
 New Orleans, Jackson and Great Northern Railroad Company, New Orleans.  
 Davis & Furber, North Andover, Mass.  
 N. S. Collyer & Co., Pawtucket, R. I.  
 Northern Railroad, Toronto, Ont.  
 Boston and Maine Railroad Company, Lawrence, Mass.  
 Narragansett Steamship Company, Newport, R. I.  
 J. J. Hillman, Boston, Mass.  
 West Amesbury Manufacturing Company, West Amesbury, Mass.  
 Perkins Bros. & Co., Lawtonville, Ga.  
 Boston and Maine Foundry Company, Boston, Mass.  
 Dane, Allen & Co., Skowhegan, Me.  
 Panama Railroad Company, Aspinwall, New Granada.  
 Mobile and Ohio Railroad Company, Mobile, Ala.  
 William Abbot, Douglass, Mass.  
 E. E. Washburn, Taunton, Mass.  
 A. Atherton, Worcester, Mass.  
 S. I. Russell, Chicago, Ill.  
 O. & J. Nottleman, Chicago, Ill.  
 Joseph Harris, Chicago, Ill.  
 Henry Campbell, Chicago, Ill.  
 Prang Bros., St. Louis, Mo.  
 Janson & Bro., St. Paul, Minn.  
 Chicago, Burlington & Quincy Railroad.  
 Johnson & Bond, Cleveland, Ohio.  
 Colwell, Clark & Co., Ottawa, Ill.  
 Vance & Wells, Ravenna, Ohio.  
 Derby Building and Lumber Company, Derby, Conn.  
 R. Prince & Co., Billerica, Mass.  
 Iron Mountain Railroad Company, St. Louis, Mo.  
 Henry Webber, Detroit, Mich.  
 Henry Hall, Fon du Lac Car Shops, Wisconsin.  
 Conant & Moore, Peirce, Ind.  
 Baker, Christie & Co., Springfield, Ohio.  
 E. B. Dobell, Lawrenceburgh, Ind.  
 Indianapolis Chair Manufacturing Co., Indianapolis, Ind.  
 George P. Carter & Co., Boston, Mass.  
 Russell Paper Company, Lawrence, Mass.  
 Fall River Bleachery, Fall River, Mass.



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